17th Annual Review and Progress Number

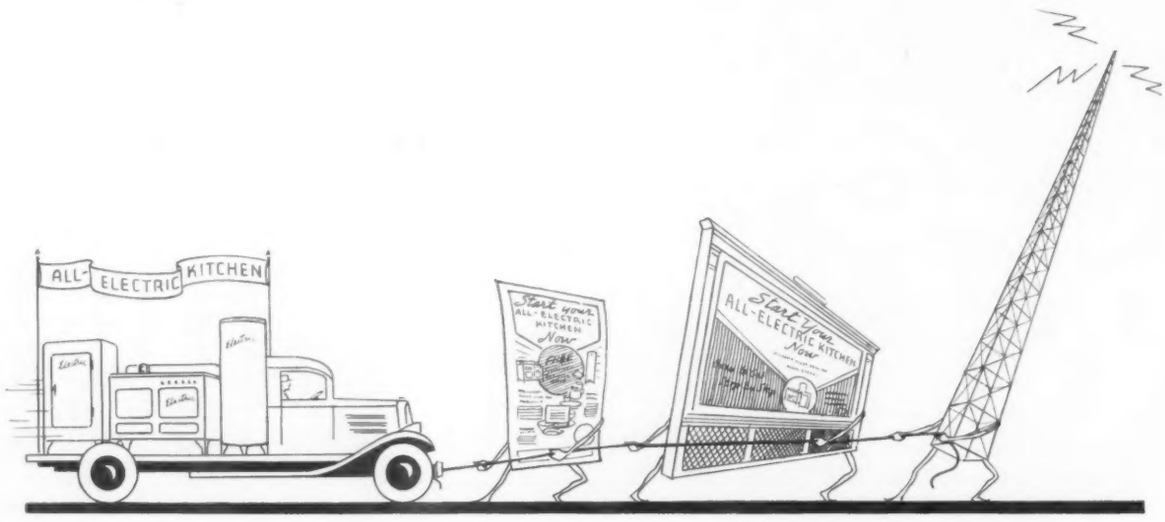
ELECTRICAL WEST

Electric AIR HEATERS • *Electric* WATER HEATERS

TODAY—as in the past—Thermador Electrical Mfg. Company stands as a dependable source of supply for load-building, profit-making, consumer-satisfying products. Thermador Air Heaters and Water Heaters will play a most important part in the West's electrification program during 1936. Wire or write for complete information.

THERMADOR ELECTRICAL MFG. COMPANY
2821 E. Pico St. : : : : : Los Angeles, Calif.

"A Seven League Step in the Science of Electric Heating



What are YOU Doing?

Edison's 1936 advertising campaign is well started. Large display ads are running in more than 170 newspapers in Central and Southern California. Radio stations are telling the story of the electric kitchen to thousands of housewives. Billboards along the highways act as constant reminders to buy electric ranges, water heaters and refrigerators.

We're doing everything possible to make this the most unusual, record-breaking drive in our history!

What are YOU doing?

Wise, alert dealers have organized their sales forces—prepared mailing and prospect lists—are tying-in with our newspaper advertising.

What are YOU doing?

This advertising barrage is for your benefit. But it's only part of the selling job. The rest is up to you.

What are you DOING?

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

2-36

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ELECTRICAL WEST

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power and Gas," and the "Journal of Electricity."

ESTABLISHED 1887

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Contents for February 1936

Volume 76 Number 2

Industry Points Toward New Peaks 25
Opportunities for 1936 27
Electra's Husband—"Who Is Stubborn?" 32
Engineering Symposium 33
Bill Jones Speaks "On Introducing a New Contributor" 45
Every Figure Has a Meaning . . 46
Sales Review and Forecast . . . 46
Appliance Sales Guide 65
Editorial 70
News of Note 72
Where to Buy It in the West . . 82

▼

• ACCOMPLISHMENTS of the industry for 1935 and the prospects for 1936 will fill those who read this issue with real optimism. Opportunties will be found for every branch of the industry in the stories and articles which review the progress of last year and which forecast the future.

•

• INDUSTRY LEADERS are equally optimistic. They see the industry entering an era of forward progress. Problems are recognized and steps have been outlined to solve them. There is tonic in their statements that should revivify any remaining doubters.

•

• ONE MIGHT FAIL to appreciate the progress which was made during the last year in the development of new apparatus and equipment to improve service, increase efficiency and develop new applications until he studies the review which starts on 33. Research has brought a heavy harvest in engineering developments in the fields of generation, transmission, distribution, metering and industrial equipment.

• AGGRESSIVE SELLING in 1935 brought record gains in loads and appliances in this territory. Statements by commercial executives and the leaders of the West's cooperative merchandising organizations show substantial additions to the quotas set for 1936. Selling is the order of the day and the industry is geared to secure its share in the public marketplace.

•

• BILL JONES is still ill—too ill to write his usual page of philosophical and pointed comment. But he introduces a new friend as a contributor, Squire Phineas Brierwood, whose farm is being revolutionized by the advent of electric service. We hope that Bill will be back on the job again soon.

•

• ELECTRICAL WEST'S second cooperative Appliance Sales Guide appears in this issue. Bill Smith tackles a prospect for a complete home laundry job and by tactful selling, gets the order.

Big things have Happened at Kelvinator!

A Built-in Thermometer tells you exactly how cold it is

FOR THE FIRST TIME --
In addition to a 5-year Protection Plan
CERTIFIED LOW COST OF OPERATION

This new Kelvinator is backed by a 5-year Protection Plan, and for the first time in the history of the industry, Kelvinator provides a Certificate of Low Operating Cost —absolute proof of the Company's confidence in its product.

Beautiful Cabinets Designed with the Aid of Count Alexis de Sakhnoffsky, Famous Modern Designer.

All Ice Trays have Flexible Rubber Grids, Making Colder and Longer Cubes Instantly Accessible.

Big things have happened

Since you or your friends bought Refrigerators

Today there is a new electric refrigerator—far, far in advance of anything you have seen—or used or heard about—a refrigerator so different that many of the seven million present users of mechanical refrigerators will be ready to replace what they have with something infinitely better

Scientific developments have resulted in a control of temperature amazingly accurate. For the first time, a built-in thermometer tells you exactly—in degrees—how cold it is in the food compartment All possible doubt is removed

Cost of operation has been reduced to a half and even a third as much as many refrigerators now in use. This cost is certified by the manufacturer so that you know what savings are possible

And to give you more ice cubes—colder, larger and instantly accessible, at the refrigerator—it provides a flexible rubber grid in every ice tray

With new beauty in exterior design, new convenience in interior arrangement, and features that have never before been offered—the 1936 Kelvinator introduces a new era in refrigeration.

Kelvinator dealers are ready to give you all the facts and tell you about the new Redinco plan by which you can pay for Kelvinator out of the actual savings it makes possible

KELVINATOR CORPORATION, DETROIT, MICHIGAN

THE 1936 KELVINATOR IS THE ONLY REFRIGERATOR THAT OFFERS ALL THESE FEATURES

1. A built-in thermometer... 2. A certificate of low cost of operation... 3. New beauty in design... 4. 5-year protection plan... 5. Flexible grids in all ice trays... 6. Interior light... 7. Food crisper... 8. Vegetable basket... 9. Automatic defrosting switch... 10. Sliding shelves.

A New High Standard of Modern Refrigeration

See the new KELVINATOR Your next refrigerator

Concentrate on Kelvinator in 1936!

NESCO *leads again*

3 Biq Improvements for 1936

• *Insulated Cover*

Easily makes NESCO the most efficient electric Roaster made. Keeps foods hot for prolonged periods. Constructed of stainless Steel—will not rust or tarnish.

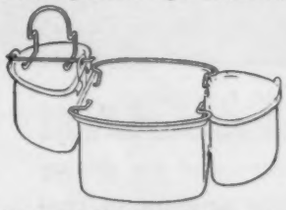
• *One Lift Pan Set*

The most revolutionary improvement yet offered by any roaster manufacturer. All three pans lift out together using detachable cool lifter. User cannot burn hands or wrist and greater convenience at once appreciated by all. Individual end pan covers of stainless steel prevent vegetables from drying out when cooking entire meal.

• *New Thermostat*

Redesigned thermostat gives more accurate regulation. New low heat of 150° Fahrenheit for warming.

Two bright surfaces with dead airspace between provides triple insulation.



End pans readily detachable from center pan using cool lifter. Fully patented.

New low temperatures combined with signal light opens up new markets and new uses.

NATIONAL ENAMELING AND STAMPING COMPANY

Executive Offices:
272E NORTH TWELFTH STREET • MILWAUKEE, WISCONSIN

Factories and Branches:
BALTIMORE — MILWAUKEE — CHICAGO — GRANITE CITY, ILL.
PHILADELPHIA—NEW ORLEANS—NEW YORK

A NESCO PRODUCT

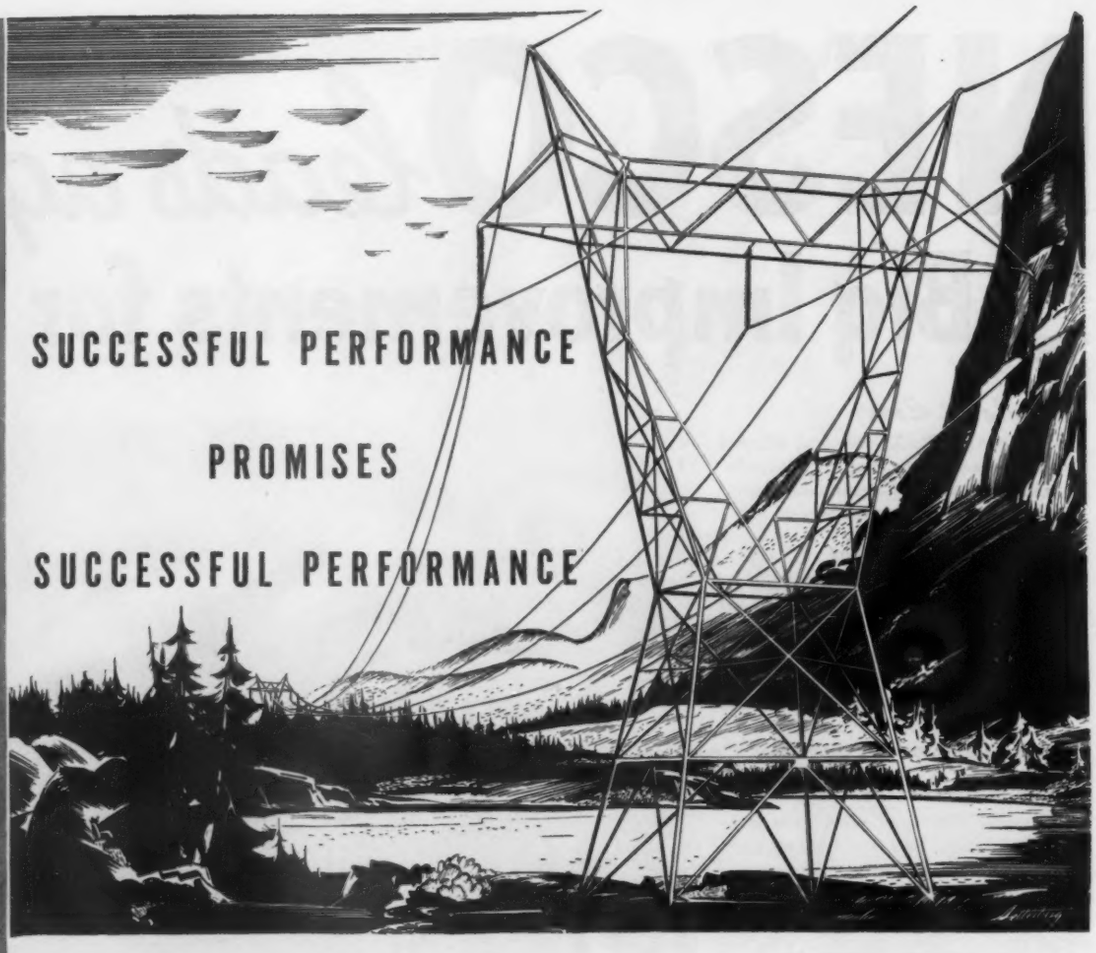
write for the complete story
Now ready!

NAME _____

ADDRESS _____

CITY _____ STATE _____

A·C·S·R·



SUCCESSFUL PERFORMANCE

PROMISES

SUCCESSFUL PERFORMANCE

All the years and all the miles in which A. C. S. R. has been giving reliable and economical service are massive evidence for a fundamental principle of cable construction.

A. C. S. R. utilizes metal in common-sense fashion: light Aluminum for conductivity, and steel for strength. The result is a simple, solid, easily handled, easy-to-string cable structure, with a superior strength-weight ratio. In addition, the larger diameter of the cable reduces corona losses.

The steel is always protected by the Aluminum strands, which, in turn, do not burn deeply from flashovers, because arcs are unstable on Aluminum. Also, the Aluminum strands are highly resistant to corrosion.

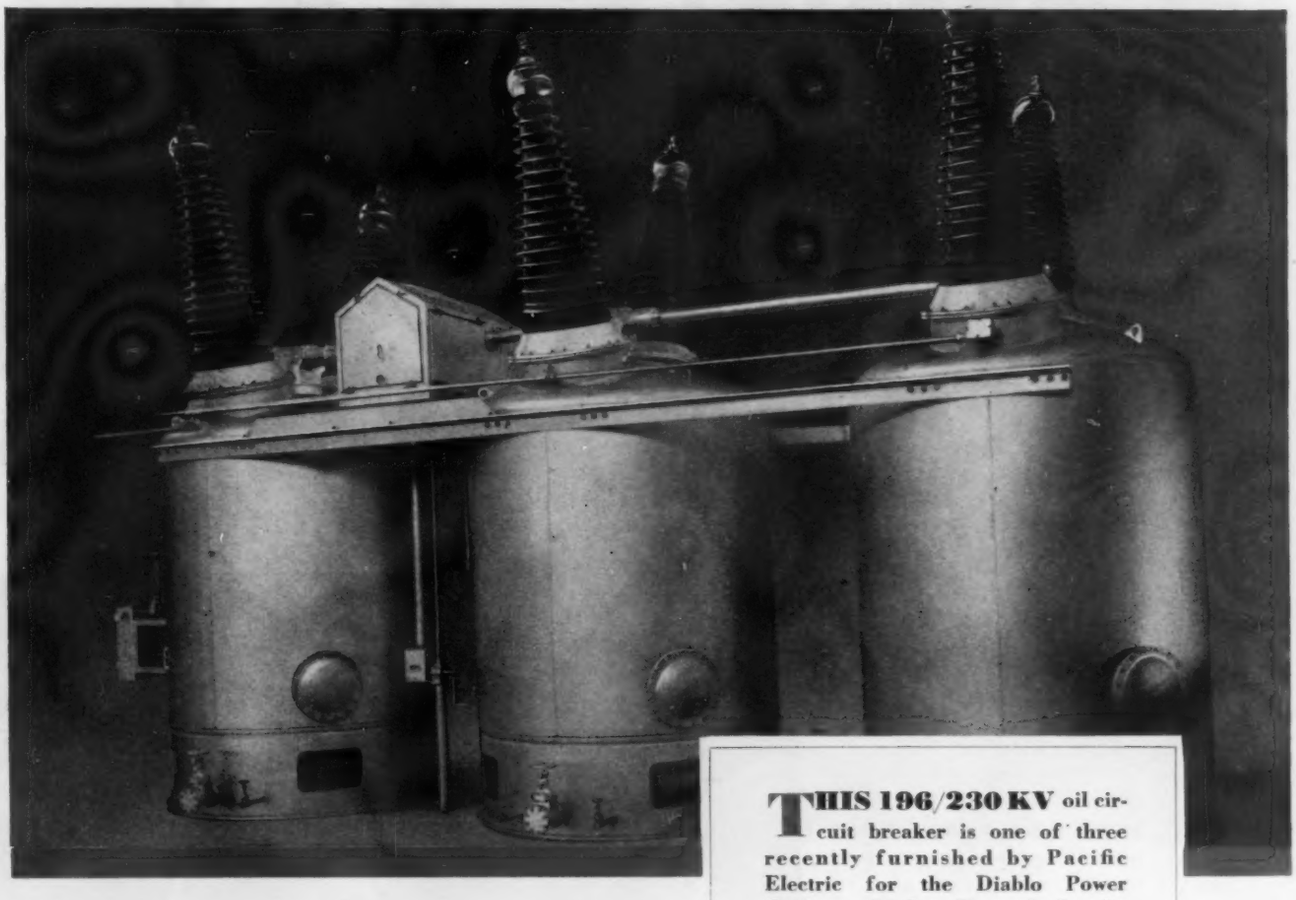
These several fundamentals make for initial economy and for lasting dependability. The problem of conductor vibration, present on all transmission lines, is successfully solved for A. C. S. R. by the use of Armor Rods and the recently developed Stockbridge Damper.

A. C. S. R. is more than a cable; it is a complete conductor service, available to all engineers, without obligation. ALUMINUM COMPANY OF AMERICA, 2132 Gulf Building, Pittsburgh, Pa.

ALCOA

ALCOA · ALUMINUM

A PACIFIC BREAKER
to serve the PACIFIC NORTHWEST



THIS 196/230 KV oil circuit breaker is one of three recently furnished by Pacific Electric for the Diablo Power Project of the City of Seattle.

★ ★ ★

Built on the horizontal multi-break principle and equipped with expulsion contact chambers it has an interrupting capacity of 2,500,000 kva. at 230,000 volts.

Operated by a powerful spring actuated, motor wound control mechanism that requires only 20 amperes, it will interrupt all currents up to its full interrupting rating within eight cycles after its trip coil is energized.

Tested at full rated voltage it cleared shorts of 3,200 amperes (the maximum available) with 2½ cycles of arc—without oil carbonization.

• DEPENDABILITY

You'll get long and uninterrupted service with a noticeable saving in maintenance from Pacific Electric oil circuit breakers because they are correctly designed and carefully fabricated by experienced engineers from high quality materials. The City of Seattle installation is noteworthy recognition of the outstanding performance of Pacific Breakers.

Investigate the economies in operation available through installing these breakers by consulting our nearest representative.

Pacific Electric Mfg. Corp.

5815 3rd St., San Francisco, Cal. **Dunes Highway, Gary, Indiana**

CHEMISTS WOULD CHOOSE *Pyrex*

Chemists DO choose Pyrex Laboratory Ware because of its high chemical stability, its resistance to thermal shock and high mechanical strength.

Insulators

• THE science of dealing with the constitution of matter finds much to commend Pyrex Insulators, since they represent an outstanding example of chemical stability and homogeneity.

The compounding, fusing and working of definite proportions of specially selected raw materials gives to Pyrex Insulators unusual characteristics and produces one of the best insulators known. Unaffected by the attack of atmospheric impurities Pyrex Brand Chemical Glass is the ideal material for insulators.

Such qualities afford Pyrex Insulators the long-continued preservation of perfectly smooth surface that means clean insulators and generations of trouble-free service.

Under abnormal weather conditions Pyrex Insulators have long since proved their superior stability.

"PYREX" is a registered trade-mark and indicates manufacture by

CORNING GLASS WORKS • CORNING, NEW YORK

TWO SIDES

to this selling job

The Graybar Salesman is a part of an experienced service of supply, started in the earliest days of the Power and Light Industry . . . Graybar service to utilities includes warehouse stocks and quick, intelligent service from 77 conveniently located warehouses . . . and a friendly understanding of your problems.

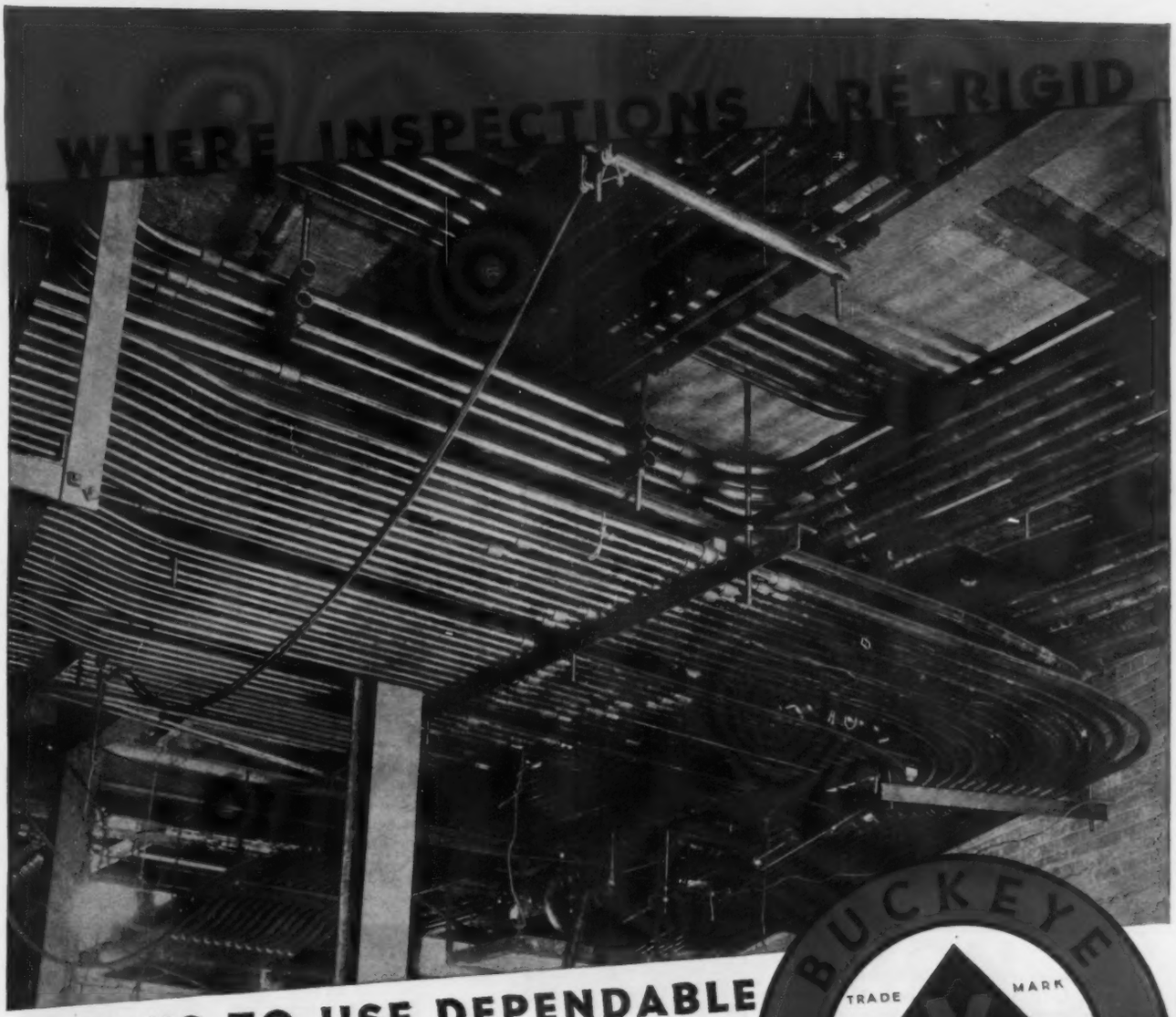
The Graybar Salesman also works in the interest of the Power and Light Industry by selling thousands of load building devices to home, office and industry. Lighting equipment, motors, radio, refrigeration, a complete line of electrical appliances and other equipment are all included.

GraybaR

ELECTRIC COMPANY

OFFICES IN 77 PRINCIPAL CITIES

EXECUTIVE OFFICES : GRAYBAR BUILDING, NEW YORK, N.Y.



IT PAYS TO USE DEPENDABLE

BUCKEYE TRADE MARK YOUNGSTOWN CONDUIT

●The consistently good working qualities of BUCKEYE conduit, the ease and uniformity with which it can be shaped and bent, its ability to take quick, accurate threads, and the tight adhesion of its three finishes all work together to accomplish one end --- a finished installation which, at a glance, clearly shows your good workmanship on the job.

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels
General Offices - - YOUNGSTOWN, OHIO

563

The Speedster

...NEW! LOW PRICED!

GENERAL ELECTRIC RANGE

WITH EXCLUSIVE

"TRIPL-OVEN"

1. Super-Speed Pastry Oven gives as much as 30% faster baking speeds—uses up to 45% less current. New Duplex CALROD Oven Unit preheats pastry space to 475° in 5 minutes.

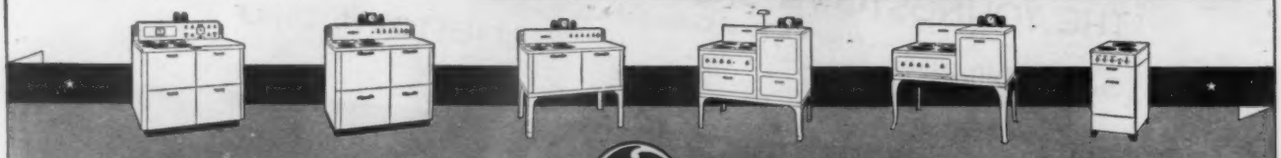
2. Super-Fast Broiler. Has 2400 or 3600 watts for broiling. Equipped with aluminum shielded Smokeless Broiling Pan, and G-E "Economizer" for speed and economy.

3. Roasting Oven with 5% greater capacity than standard 16 inch oven. Accommodates 20 lb. turkey. Sliding shelves with safety stop at rear. Counterbalanced door.

THE sensational "Tripl-Oven" in the new G-E Speedster gives 30% faster baking speeds with 45% less current. THAT'S something to shout about to your trade! "It's the greatest advance in electric cooking in ten years," says one famous home economist.

Priced to sell to the mass market, the new CALROD equipped G-E Speedster is years ahead of the procession in speed, economy, appointments, new modern styling. Accessory Back Shelf with G-E Lumiline lamp and modernistic salt and pepper shakers available at slight additional cost. Space for Automatic Timer provided.

The Speedster and other new ranges in the 1936 G-E line, plus the new hard hitting "New Freedom" Sales Campaign, give you *everything* needed for quick, easy sales and substantial net profits. Get all the facts! General Electric Company, Appliance and Merchandise Department, Section RC2, Nela Park, Cleveland, Ohio.



GENERAL ELECTRIC

AUTOMATIC ELECTRIC RANGES

(Right) G. E. Electric Range "The Imperial" equipped with Monel Metal top and Calrod Heating Units sheathed in Inconel.

(Left) Hotpoint Electric Range "The Mayfair" equipped with Monel Metal top and Calrod Heating Units sheathed in Inconel.

MODERN *not merely in appearance but in* CONSTRUCTION

Tops made of MONEL METAL *Heating Units enclosed in* INCONEL*

THERE are many electric ranges today that are modern in *appearance*. But to promote the progress of these load-building appliances even further . . . and to meet the demands of users . . . electric ranges must also be modern in *construction*.

No electric range can be modern, if it still has a top that permanently discolors, chips, cracks or scales under a sizzling-hot dish, or when banged by a heavy utensil.

The ranges shown above are modern *both* in appearance and in construction. One is the Hotpoint "Mayfair" . . . the other the G. E. "Imperial."

These de luxe ranges gleam with beautiful Monel Metal tops. And they are also equipped with Calrod heating units *enclosed in Inconel*.

MONEL METAL TOPS. Range tops made of Monel Metal retain their well-kept silvery sheen for years. They are not at all affected by hot pans and sizzling pots right off the burner—easy to clean and do not permanently stain. Moreover, they are solid through and through, therefore chip-proof. Permanently corrosion-resistant, eternally rust-proof and wear-proof almost without limit.

INCONEL ENCLOSED HEATING UNITS: Calrod Units are sheathed in Inconel, a special Nickel-Chromium alloy so resistant to oxidation it will give long life on any type of enclosed heating unit.

Write us for a list of ranges using Monel Metal tops, and data relative to Inconel as a sheathing for heating units.

*Reg. U. S. Pat. Off.

• • •

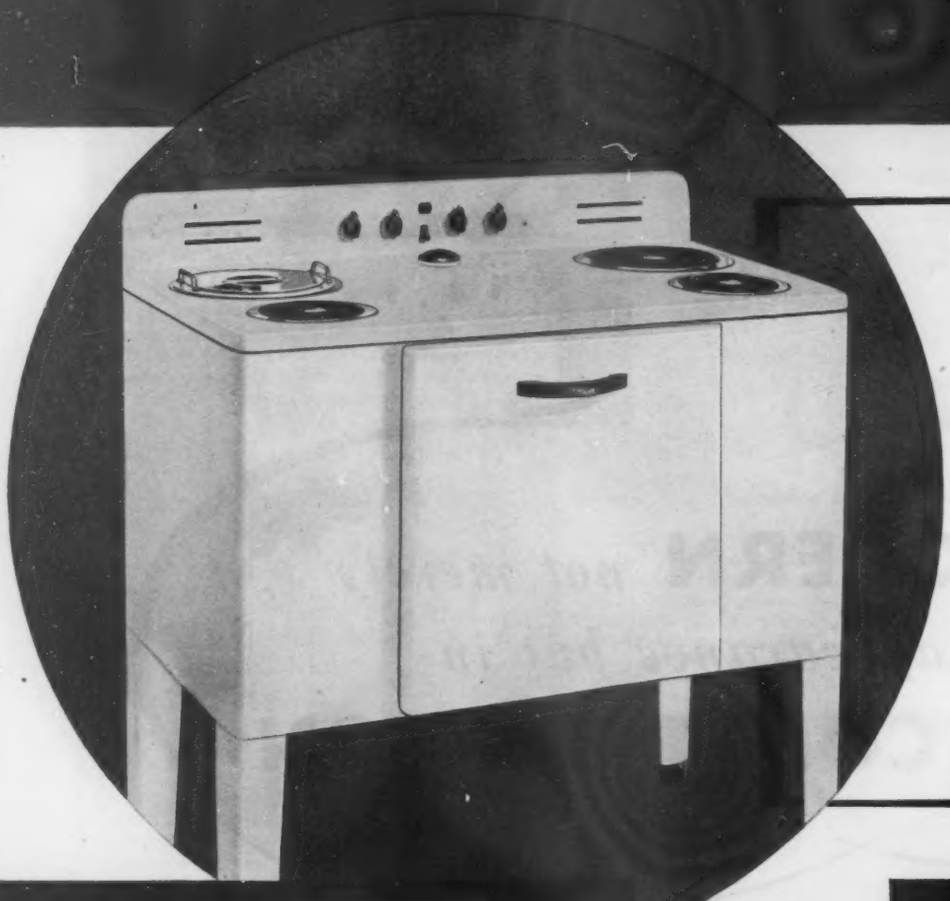
THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET NEW YORK, N. Y.

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

Hotpoint OFFERS PRODUCTS

TO HELP YOU



The DORIAN—Here's a new Hotpoint Electric Range that will help you get a lion's share of the booming range business. Hotpoint aims this beautiful new full-size range at the volume market. With it as a campaign leader you should break quota in a hurry. Full 39 in. wide with large 16 in. oven. Convenient work surface is in center of the range top. With 3 Hi-speed Calrod Units and Thrift Cooker, list price, **$99.75** f. o. b. Chicago

with 4 open coil units, **$78.50.**

All prices are f. o. b. factory at Chicago, Ill.

←The BELMONT
Hotpoint's new style and price leader. Full size, all-porcelain enamel with 3 Hi-speed Calrod Units and Thrift Cooker, list price **$128.00**
f. o. b. Chicago
with 4 open coil units **$106.75**

The STRATFORD
A newly styled quality range designed as companion to New Era and Mayfair. All-porcelain enamel with 3 Hi-speed Calrod Units and Thrift Cooker, list price **$190.00**
f. o. b. Chicago

ELECTRIC Hotpoint AUTOMATI

RANGES AND WATER HEATER

PRICES AND PLANS

"GET THE ORDER"

OPTIMISM is growing. Range merchandisers are preparing for a big year. Public Opinion has swung to electric cookery. Be prepared for a big year. But "GET THE ORDER" early.

Hotpoint offers a new line of Ranges and Water Heaters, New Sales Plans, Contests and Promotional Material that enable you to start merchandising *now* and keep it up all year.

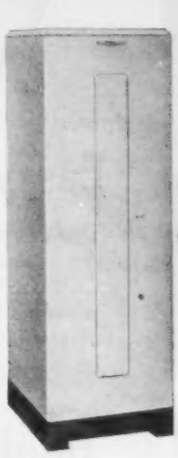
Ask the Hotpoint representative in your district for complete details about Hotpoint's dynamic "GET THE ORDER" Plan for 1936.

TWELVE MONTHS PROGRAM—Five separate activities, each complete with special material for each campaign, giving a well-organized year 'round activity.

NATIONAL ADVERTISING—Full page advertisements, many in color, in Saturday Evening Post, Ladies' Home Journal, McCall's, Good Housekeeping, and Better Homes and Gardens reach every other family in your community.

CLEAN SLATE SALES PLAN—For January, February, March the "Clean Slate" Sales Plan brings you complete equipment, including contests, window display, sales promotion material to help "GET THE ORDER."

Be sure to see the "Clean Slate" Plan Book. Look over the sales contest for retail salesmen and the mass of advertising material which can readily be adapted to your individual activity. It is easy for you to "GET THE ORDER" with this equipment.



HOTPOINT'S NEW LINE OF ELECTRIC WATER HEATERS

Hotpoint's new line of Water Heaters is complete. The popularly styled rectangular Vogue model is standard bearer and is now offered in sixteen different models. There are also six circular type heaters. Many sizes are available with monel metal tanks which are guaranteed for 20 years. Now you can "GET THE ORDER" for electric water heaters no matter what size heater is required.

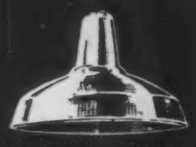
WATER HEATER SALES PLAN—Here is the Old Faithful Plan Book—a completely organized selling plan—with samples of Hotpoint Water Heater sales promotion material, merchandising ideas, retail sales contest, newspaper advertising, direct mail, window displays, etc. Get in touch with the Hotpoint district representative in your territory.

ELECTRIC Hotpoint AUTOMATIC

RANGES AND WATER HEATERS

SON GENERAL ELECTRIC APPLIANCE CO., INC., 5612 W. TAYLOR ST., CHICAGO

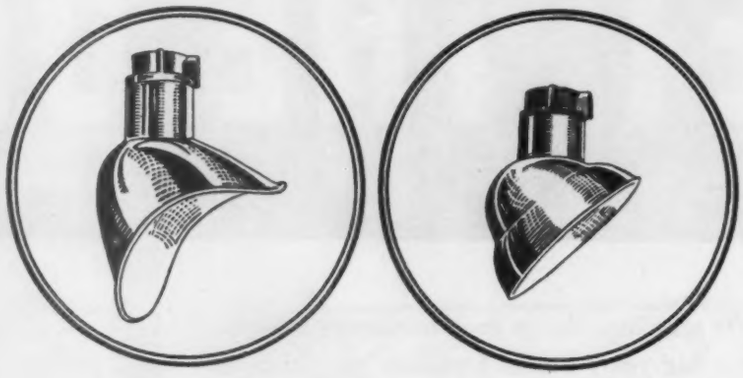
SIGHT-CRAFT
INDUSTRIAL UNITS
HAVE EXCLUSIVE
"VITROLUX"
FINISH
Insuring
long, durable and efficient service under the most severe atmospheric conditions.



STANDARD DOME
Socket Type

DEEP BOWL
Threaded Neck, Type "RR"

SIGHT-CRAFT Sign Reflectors



Easily, quickly-relamped from ground!

You can stay on terra firma, when you relamp these SIGHT-CRAFT units. An ordinary lamp changer avoids the perils—lamps burn in **vertical position.** CONTRACTORS—note these other **sales** advantages: rim rolled under **prevents** accumulation of moisture and **corrosion**—reflectors fired with 3 coats of everlasting VITROLUX. . . . Note, too: **easier to wire** thereby reducing installation costs.

"VITROLUX" finish of these Western Made units acknowledged as superior by WESTERN INDUSTRIES

The West has **many** climatic conditions. Atmospheric conditions in Western industries are varied. Therefore, both outdoor and indoor reflectors are put to **severe tests.** No **ordinary** reflector 'can take it'. . . . These conditions are responsible for the development by SMOOT-HOLMAN engineers of the **everlasting** VITROLUX finish—the **finest quality** of porcelain enamel. All SIGHT-CRAFT units are drawn from special treated enameling iron and are fired with **three coats** of VITROLUX enamel at 1500° F—assuring very definitely **long, durable, efficient service** under the most severe atmospheric and climatic conditions. This superior finish **costs no more**—in fact **costs less** because these units are made in the West, **saving** long haul transportation **costs.** Stocks are close at hand—so are **profits** to the wise contractor who specializes in SIGHT-CRAFT units!

Let us help you with your lighting problems

SMOOT HOLMAN COMPANY
SIGHT-CRAFT
INGLEWOOD CALIFORNIA
MADE IN U.S.A.

SMOOT-HOLMAN COMPANY

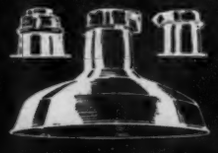
Inglewood, California

San Francisco
154 Eighth Street

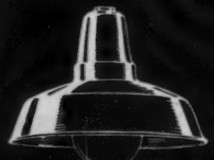
New York
10 Jones Street

Seattle
532 First Ave. So.

STANDARD DOME
Threaded Neck, Type "RR"



STANDARD DOME
With Separable Fitting



Dust and Vaporproof
REFLECTORS
NEC Standard

UTILITY LIGHT
For Gardens, Industrial Yards, Garages and General Floodlighting

G. E. Home Lighting Training Courses offer individual help to speed up BETTER LIGHT-BETTER SIGHT PROGRAMS

NATION-WIDE COMMENTS INDICATE VALUE OF TRAINING

AN ILLUMINATING ENGINEER . . .

"I frequently contact all of our enrolled advisers, and their progress is all to be hoped for. They are very much interested in their work . . . ."

A HOME LIGHTING SUPERVISOR

". . . the (training) course must at present be one of the principal factors in our department's improvement . . . September was our best month since the work started and the wattage installed in October has more than doubled that of September."

A HOME LIGHTING ADVISER . . .

"My first two or three home calls with the kit were pitiful failures when compared with later calls made after assignments Three and Four had been studied. No doubt these later calls which now seem to have been fairly successful will seem equally unsatisfactory when remaining assignments have done their work."

A RESIDENCE LIGHTING MANAGER

"The whole course of instruction is very valuable to me. The material supporting 'selling not telling' better lighting is usable every day . . . It fills in that particular branch of the lighting demonstration which has been lacking—the selling of our service."

A LIGHTING ENGINEER . . . . .

"The Better Lighting Program without the GE-LaSalle Training Course would be like a ship without a rudder. Its many suggested ways of helping meet the responsibilities in the efficient manner necessary to a successful completion of the program are of most importance to us, who are in charge of field work."

EARLY ESTIMATES of the value of personnel training through the General Electric Home Lighting Training Courses . . . in time and money saved as well as in the faster, more efficient development of Better Light-Better Sight programs . . . have been and are being more than justified by results.

With more than 1700 of these courses in actual use by home lighting advisers, supervisors, and retail sales people at the present time, worth while results from this invaluable training have been reported from all parts of the country. A few comments from representative people who are taking (and in some cases from people who have completed) the study courses, are given in the adjoining column.

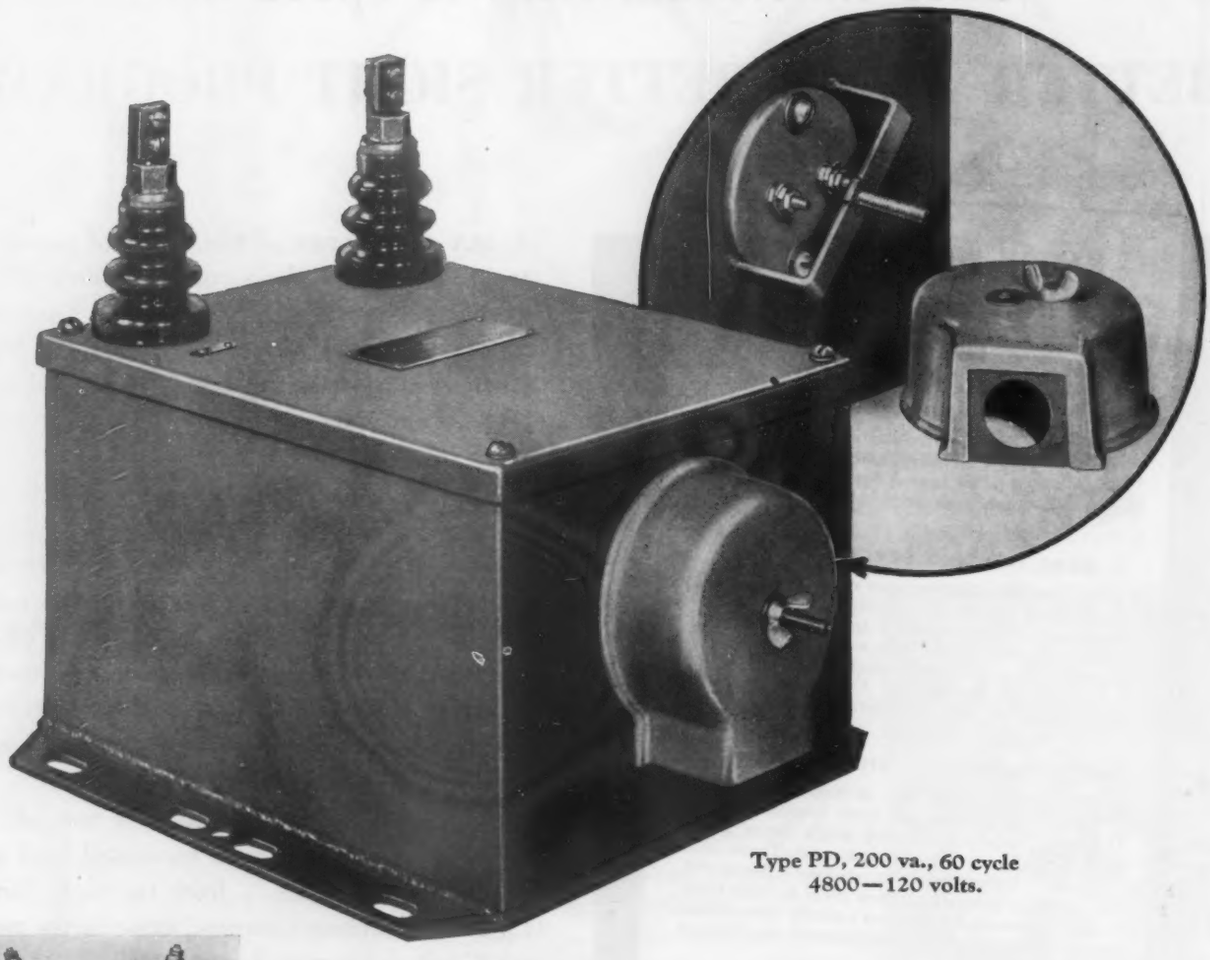
If you haven't yet investigated the advantages to be gained . . . in increased load and in merchandise sales . . . from the G. E. Home Lighting Training Courses, write to the nearest General Electric Incandescent Lamp Division office for details.

EDISON MAZDA LAMPS

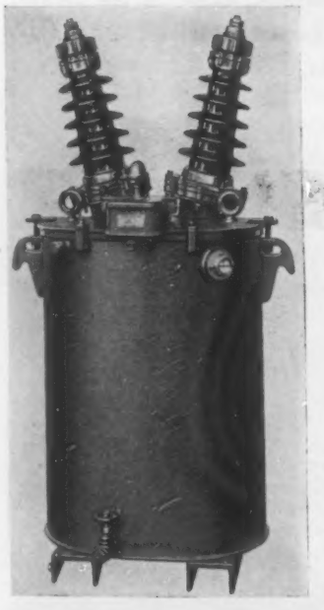
GENERAL ELECTRIC

They stay brighter longer

Potential Transformers
of Balanced Design ....



Type PD, 200 va., 60 cycle
4800—120 volts.



Type PW Potential Transformer—46 kv

UP TO DATE Metering practice demands that three requirements be met in the design of Instrument Transformers—

HIGH INSULATION STRENGTH (60 Cycle and Impulse)
HIGH OVERALL ACCURACY
CONVENIENT MECHANICAL FEATURES

Allis-Chalmers Type "PD" Potential Transformers meet these requirements.

Primary bushings are of wet process, corrugated porcelain and are co-ordinated with the winding strength. Solderless connectors are provided.

Active materials are balanced to give the highest overall accuracy considering the combined effect of phase angle and ratio errors.

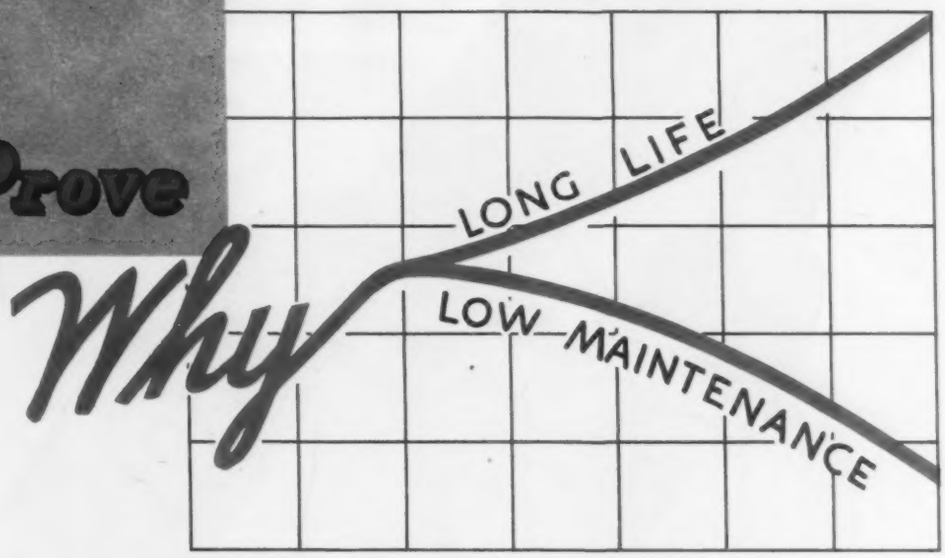
Secondary terminal studs are provided on a circular insulating block over which a cast aluminum housing provides protection. Provision is made for conveniently attaching conduit for inclosed secondary wiring. The housing can be rotated 360 degrees to allow conduit entrance from the most convenient direction. A sealable brass wing nut holds the housing securely in place.

Catalog No. 152 describes the complete line of Allis-Chalmers Instrument and Metering Transformers. Your copy will be supplied upon request.

ALLIS-CHALMERS

— Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, U.S.A. —

FIGURES AND FACTS Prove



Why

ARE FOUND IN

Hubbard Pole Line Hardware

Cost figures and experience of utilities throughout the country prove the economy of Hubbard pole line hardware and Peirce construction specialties.

When engineers, executives or Line Foremen specify Hubbard these facts assure them of obtaining maximum economy, long life, convenient stocks and quick delivery.

- **Every item, properly designed for the job to be performed is manufactured from new open-hearth steel and is protected by hot double-dipped, heavy, smooth, non-porous galvanizing.**
- ***All hardware and specialties sold in the West are manufactured in our own plant in Oakland, California.***
- **Adequate stocks of every item are carried by General Electric Supply Corp. and Graybar Electric Co. branches conveniently located throughout the West.**

Call on our experienced and competent engineering staff to solve your special hardware problems.

★ **Notice** We have recently developed special pole line hardware for rural lines, telephone lines, also street lighting and wood pole construction. Catalogs sent on request.

Hubbard and COMPANY

OAKLAND, CAL. PITTSBURGH CHICAGO

The HARDWARE Makes The Line—HUBBARD Makes The HARDWARE

Meet the.... Increasing Load with... Increased Efficiency in the Old Plants

Regain up to 10% from Existing Water Development

and amortize the investment within a year. Results already obtained from replacement of obsolete impulse turbine parts in the older plants have more than justified the comparatively small investment involved in the changeover. Increased capacity, a higher safety factor and lower unit operating costs are assured by a simple process of modernization.

Improvement in bucket and nozzle design provide the direct means for betterment of operating characteristics and fortunately these parts can be substituted with minimum outage time. Many plants are likewise subject to improvement with modern control and safety devices.

Utility engineers are invited to capitalize Pelton experience in hydro plant modernization.

THE PELTON WATER WHEEL COMPANY

HYDRAULIC ENGINEERS

120 Broadway NEW YORK | **2929 Nineteenth St. SAN FRANCISCO** | **Paschall Station PHILADELPHIA**

Exclusive Western Representatives for Baldwin-Southwark Corp., De La Vergne Engine Co., Cramp Brass & Iron Foundries Co., Woodward Governor Co. and Chapman Valve Mfg. Co.

PELTON

ROEBLING

PAPER *Insulated* CABLES

We make these cables in both Type H and unshielded constructions, single and multiple conductor, and in a wide variety of voltages.

All Roebling Impregnated-paper-insulated cables meet the design, manufacturing, test and guarantee specifications prepared by the High Tension Cable Committee of the Association of Edison Illuminating Companies in consultation with the Insulated Power Cable Engineers Association.

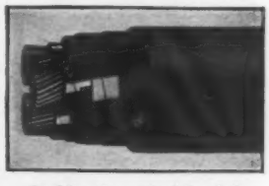
We would be glad to receive your inquiry regarding these cables or any of the many other Roebling Electrical Wires and Cables listed below.

OVER 60 OTHER TYPES

Power Cables: Paper; Cambric; Rubber » Parkway Cable » Tree Wire » Service Cables » Station Cables » Rubber Covered Control Cables » Rubber Covered Wires and Cables: Code; Intermediate; 30% and 40% Performance; 35% and 40% Performite; Plain Rubber 60% Sheath Power Cable and 40% or 60% Sheath Flexible Cords » Slow Burning Wires and Cables » Weatherproof Wires and Cables » Submarine Cables » Portable Cords » And a wide variety of other wires and cables.

JOHN A. ROEBLING'S SONS CO. OF CALIF.
San Francisco • Los Angeles • Seattle • Portland

Roebling Rubber Insulated Cable.



Roebling Varnished Cambric Insulated Cable.

ONLY A FINE PRODUCT MAY BEAR THE NAME ROEBLING

A Heritage of Quality

WESTON *Instruments*

in all sizes, shapes, and for all requirements. The coupon will bring you full data . . . Weston Electrical Instrument Corporation, 582 Frelinghuysen Avenue, Newark, N. J.

WESTON ELECTRICAL INSTRUMENT CORPORATION, 582 Frelinghuysen Avenue, Newark, N. J.
Send Bulletin on Weston Instruments.

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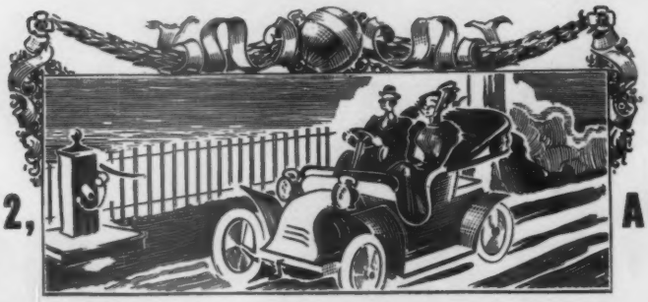
OPEN FIRE!

FRIGIDAIRE GOES INTO ACTION WITH THE OPENING GUN OF ITS GIGANTIC CAMPAIGN FOR 1936

● Frigidaire's field organization, largest in the industry, is on the move toward its most successful selling season in history! In 38 dramatic conventions now going on from coast to coast, Frigidaire is presenting to its 20,000 dealers and salesmen the sensational Frigidaire for 1936—a product utterly new, stunningly beautiful, crammed full of powerful sales appeal in every respect. New campaign strategies are being introduced—dynamic, forceful new plans for action that overlook nothing to insure your biggest Frigidaire year! The men who have seen these spectacular new products and the powerful, compelling sales program are confident of sweeping victory. They agree that the challenge "You'll do Better with Frigidaire in '36" is no idle boast! . . . Frigidaire is going into action, and its greatest record-breaking year lies ahead! FRIGIDAIRE CORPORATION, DAYTON, OHIO

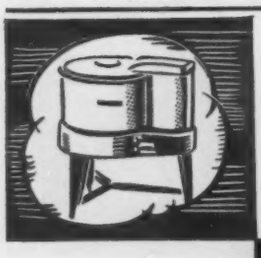
You'll do better with Frigidaire in 1936!

THE OLD TIMER DISCOVERY DRIVE

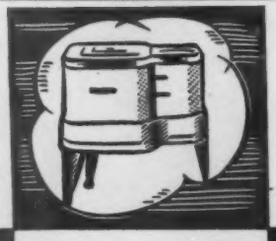


MARCH 2, 1936 — **APRIL 30, 1936**

General Electric, from March 2 to April 30 of this year, will conduct a Sales Drive of extraordinary power for General Electric Home Laundry Equipment Dealers. Forecasts are that this sales drive will be the most effective one yet staged in the Home Laundry Equipment industry, and that 1936 will be a particularly fortunate and prosperous one for G-E Home Laundry Dealers.



A sales plan that works — a sales plan with every detail worked out for your profit.



Easy to operate and attractive to the public. Spotlights attention on your store.

Develops your market — brings to light many new prospects in your community.

Brings new customers to your store. You will sell more home laundry equipment.

Increased store traffic — will help your sales on every item you merchandise.

New and powerful selling helps. New displays — new sales training courses.

A new and highly effective method of publicizing the Drive. You will like it.

Send the coupon today for full details of the "Old Timer" Sales Discovery Drive.

General Electric Company
Bridgeport, Conn.

Gentlemen:

I'd like to know the details of the "Old Timer" Discovery Drive. Please send me my copy of the "Old Timer" Presentation.

Dealer's Name.....

Street Address.....

City.....State.....

GENERAL ELECTRIC

HOME LAUNDRY EQUIPMENT

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONN.

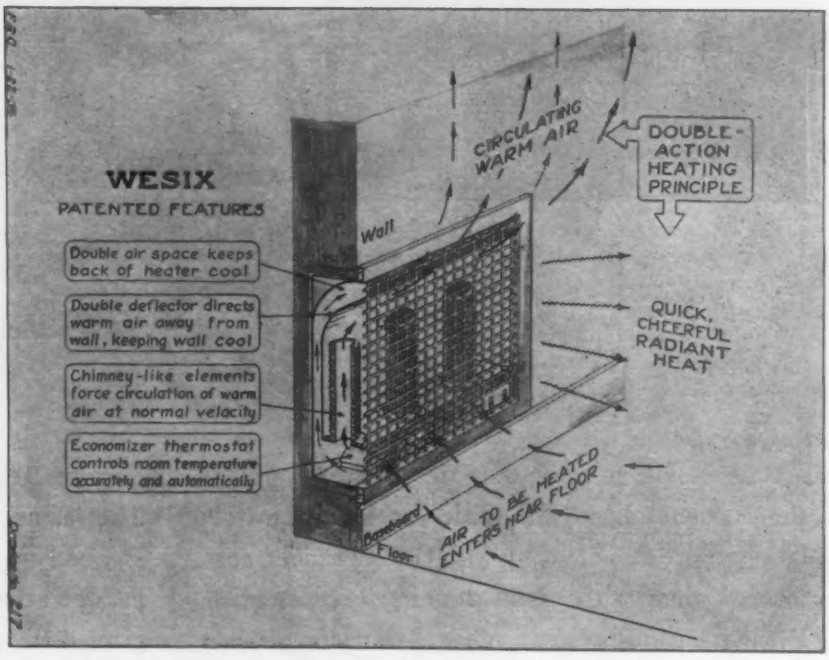
WESIX LEADERSHIP IS NATION-WIDE

For the Past 16 Years These Basic Principles of Electric Heating Have Been Acclaimed by Leading Utilities and Users

Last Year's Gigantic Sales Increase is Their Best Endorsement

Wesix holds the basic patents which are fundamental to the proper heating and circulating of air by electricity.
That is why no other electric heater uses these sound and correct principles.
That is why leading electric companies wishing to give their customers trouble-free circulating warmth—quickly and economically—actually "push" Wesix Electric Heaters.
That is why government electrical engineers specify them for their projects. They recognize that Wesix employs the correct method of balancing radiation and convection.
However the gigantic increase in sales, year by year, is the best endorsement of the patented principles used by Wesix.

Wesix Electric Heater Co.
390 First Street, San Francisco
631 San Julian Street, Los Angeles
2008 Third Avenue Seattle


WESIX
PATENTED FEATURES
Double air space keeps back of heater cool
Double deflector directs warm air away from wall, keeping wall cool
Chimney-like elements force circulation of warm air at normal velocity
Economizer thermostat controls room temperature accurately and automatically
CIRCULATING WARM AIR
DOUBLE-ACTION HEATING PRINCIPLE
Wall
QUICK, CHEERFUL RADIANT HEAT
Baseboard
Floor
AIR TO BE HEATED ENTERS NEAR FLOOR

Before the days of the Wesix heater, reflectors and fans were generally employed to dissipate heat. It was not until Wesley Hicks developed the principles of circulating electrically heated air by natural means (illustrated above), eliminating moving parts, that electric heating became a complete success.

From Coast to Coast, Homes and Buildings Use Wesix

One of the many Wesix Automatic Heated homes in Georgia.

The T.V.A. towns of Norris and Pickwick Landing, Tennessee, are heated by Wesix, automatically.

Chimney-less Apartment House in Mississippi, Wesix automatic heated.

Wesix Heated Hotel in California

YOU WILL PROFIT BY USING G-E PYRANOL TRANSFORMERS

FOR SUCH APPLICATIONS AS

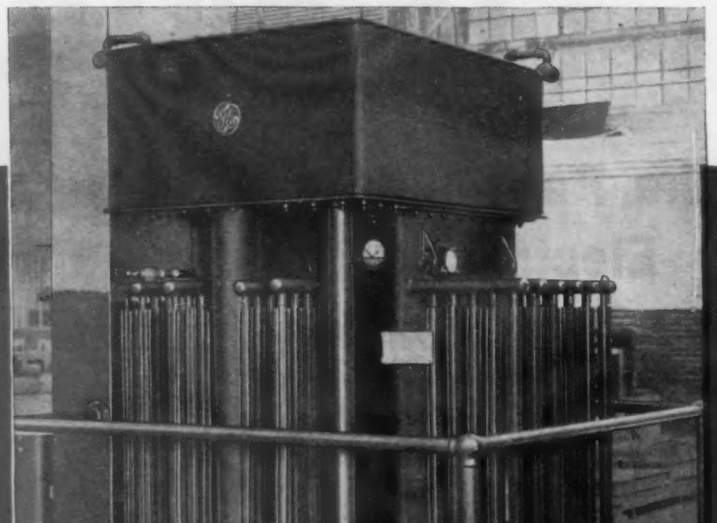
Indoor installations in apartment, office, hospital, hotel, school, and theater buildings

Industrial plants

Sidewalk and street vaults

Mines, tunnels, and subways

Railway cars, locomotives, docks, and ships



Pyranol power transformer, 900 kva, 2300 to 230 volts, 60 cycles. Supplying power to electric annealing furnaces. A saving of 23 per cent in total installed cost was made by the use of a Pyranol transformer

IT is possible to meet the safety requirements of the National Electrical Code for indoor installations more economically with G-E Pyranol transformers than with oil-filled units, because with Pyranol transformers many restrictions are eliminated.

All Ratings Available

G-E Pyranol transformers are available in all kva and voltage ratings. They are designed and built especially for use with Pyranol, the noninflammable and nonexplosive cooling and insulating liquid.

Service Records Prove Dependability

The remarkable service record of more than 250 Pyranol transformers, many of which have been in operation for more than three years, has proved their dependability, and verified the conservative nature of the claims made for them.

For further information, ask the G-E office nearest you for a copy of Bulletin GEA-2048, or write to General Electric Co., Schenectady, New York.

PYRANOL—The Most Important Transformer Development Since Silicon Steel

300-27

GENERAL ELECTRIC

ELECTRICAL WEST

[*Devoted to the economic production, transmission and distribution of electric power and its application to industry, commerce and the home in the Pacific Empire, and to the sale and distribution of electrical utilization devices, equipment and appliances in that area*]

February 1936

Industry Points Toward New Peaks

SUBSTANTIAL gains revealed by analysis of the statistics of the light and power industry of the West show that business is back on the normal trend line of growth which the depression interrupted. During 1935 the upward trend of the previous year was accelerated; final result was new peaks in customers, load and output. Equally encouraging was the shift in public attitude, with more interest in the benefits, cost and convenience of electricity than in the continued political attacks on the industry. Thus the uncertainty which held back growth and development is being dispelled and in its stead is optimism over the prospects of the future.

High spots from the detailed analyses in the accompanying tables reveal these outstanding facts: Energy output in 1935 topped all previous figures, including 1930, with a total of 16,441,368,000 kw.-hr. This is a 20,000,000 kw.-hr. increase over 1930 and a gain of 15.2 per cent over 1934. Growth occurred in every section of the West, but the greatest increases were in the Intermountain region where mining loads were restored and construction activities took large blocks of power. The number of customers served also topped all previous figures. At the close of the year utilities in the 11 Western states were serving 3,288,912 customers. The increase for the year was 67,376. Gross revenues increased from $233,000,000 in 1934 to $246,000,000 or 5.5 per cent. Eleven Western utilities exceed 1,000 kw.-hr. in average domestic consumption and three more approach this figure.

Budgeted expenditures for new construction for 1936 are $47,800,000 and maintenance will require an additional $12,810,000. These compare with 1934 totals of $29,700,000 and $11,500,000. None of these figures include money spent on federal or other governmental projects, which will swell the total market for electrical equipment and apparatus by several millions.

Installed capacity of generating plants remained practically stationary at 5,345,396 kw. However 1936 will see one of the greatest increases in any single year in the history of the industry, the total being 505,000 kva. This is made up of 360,000 kva. at Boulder Dam for the Los Angeles Bureau of Power and Light and other southern California municipal systems, 135,000 kva. for the Seattle Lighting Department and 10,000 kva.

Most promising factor in the outlook for 1936 is that the industry is geared for action. Operating results have stimulated the incentive to grow, to develop, to sell. The year just closed has proved that these things can be done, despite theorists and demagogues with their avowed intention of centralizing power over a basic industry in the hands of a few bureaucrats. The soundness, stability and service of the industry are demonstrated facts. The opportunities for expansion, development and further service are recognized and appreciated. Nothing will deter the industry from greater accomplishments in 1936.

Table I—Central Station Operations in 11 Western States, 1934 and 1935

	11 Western States		United States		Per Cent 11 Western States of Total U.S.
	1934	1935*	1934	1935*	1935
Energy Generated (millions of kw-hr.)	15,209,982	16,441,368	91,150,476	98,312,992	16.7
Energy Generated in Hydro Plants (millions of kw.-hr.)	12,161,572	13,962,637	34,058,492	39,894,348	35.0
Energy Generated in Steam Plants (millions of kw.-hr.)	2,169,686	2,478,731	57,091,984	58,418,644	4.2
Percentage of Total Energy Produced by Hydro	79.9	84.8	37.4	40.6	...
Gross Revenue from Sale of Energy	$233,000,000	$246,000,000	$1,980,460,000	$2,068,500,000	11.9
Total Customers	3,221,536	3,288,912	24,808,537	25,341,203	13.0
Domestic Customers	2,522,532	2,586,450	19,950,029	20,410,377	12.7
Farm Customers	186,868	192,097	743,954	793,977	24.2
Installed Generator Capacity (kw.)	5,333,578	5,345,396	35,832,878	35,803,268	14.9
Installed Hydro Generator Capacity (kw.)	3,410,615	3,416,292	9,796,510	9,959,764	34.3

*12 Months ending November 30, 1935.

Table II—Energy Generated in Public Utility Plants of 11 Western States, 1924-1935

ENERGY GENERATED (THOUSANDS OF KW.-HR.). U. S. G. S. DATA

State	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935*
California	5,566,440	6,215,813	6,898,620	7,355,548	7,979,837	8,849,622	8,948,326	8,796,177	7,948,505	8,023,243	8,562,056	8,939,451
Oregon	678,394	729,859	831,135	844,654	1,040,743	1,161,386	1,219,250	1,176,987	968,980	965,748	1,002,328	1,075,053
Washington	1,503,560	1,623,007	1,807,792	2,121,939	2,361,024	2,552,325	2,555,233	2,572,134	2,486,754	2,438,832	2,747,366	2,958,137
Nevada	41,623	39,703	36,840	51,236	54,935	43,840	42,895	19,006	32,749	24,231	32,152	29,476
Utah	266,946	339,967	349,604	338,067	282,791	402,005	292,550	276,483	275,476	327,379	206,679	301,943
Arizona	153,196	130,531	172,243	278,559	335,755	283,023	384,443	404,309	280,898	295,688	344,939	367,834
New Mexico	19,913	21,787	25,993	33,462	52,326	67,179	75,871	179,658	157,611	157,482	173,233	189,106
Colorado	490,030	522,892	561,962	551,173	541,150	563,813	573,341	528,817	478,263	459,453	506,710	542,375
Wyoming	53,556	55,544	59,381	66,493	83,931	98,665	98,215	94,539	84,633	78,964	81,856	92,579
Idaho	792,532	754,079	810,789	806,402	947,709	894,417	911,709	796,484	584,589	594,428	685,069	651,128
Montana	1,145,285	1,262,629	1,407,903	1,394,655	1,619,351	1,613,688	1,319,800	966,097	635,093	922,814	867,504	1,294,286

*12 months ending November 30.

Table III—Classification of Electric Customers, 1934 and 1935

	—Total Customers—		—Farms Served*—		——Domestic——		Commercial Lighting and Small Power		*Wholesale Power and Miscellaneous	
State	1934	1935	1934	1935	1934	1935	1934	1935	1934	1935
California	1,901,392	1,940,909	81,093	80,748	1,517,819	1,549,195	263,635	272,239	38,845	38,727
Oregon	243,958	246,458	17,839	18,368	188,863	190,816	34,229	34,462	3,027	2,812
Washington	427,883	438,306	40,060	42,287	329,524	338,254	54,882	55,265	3,347	2,500
Nevada	18,221	18,600	946	947	14,070	14,383	3,139	3,206	66	64
Utah	111,913	113,415	16,130	16,576	84,016	85,421	11,463	10,965	304	453
Arizona	72,572	74,394	5,577	6,133	55,296	56,770	9,982	10,202	1,717	1,289
New Mexico	35,186	35,618	1,350	1,374	26,758	27,247	6,371	6,320	707	677
Colorado	206,687	208,051	7,145	7,319	163,527	163,719	29,498	29,647	6,517	7,366
Wyoming	32,307	32,882	527	574	25,972	26,717	5,254	5,048	554	543
Idaho	82,326	86,490	13,433	14,880	56,594	59,518	11,653	11,458	646	634
Montana	89,091	93,795	2,768	2,891	70,043	74,410	15,629	16,010	651	484
11 Western States	3,221,536	3,288,912	186,868	192,097	2,522,532	2,586,450	445,735	454,822	56,381	55,549
United States	24,808,537	25,341,203	743,954	793,977	19,950,029	20,410,377	3,727,478	3,772,007	387,076	364,842

*In previous year's tables Farm customers, because of irrigation pumping, have been included in Wholesale Power and Miscellaneous.
†See above note; also 1934 and 1935 totals are not comparable due to reclassification.

Table IV—Generator Rating in Utility Plants, December, 1935*

				Generator Capacity of Plants Operated by									
				One Type of Prime Mover						Combination of Two or More Types			
				Water Power		Steam Power		Internal Comb. Engines		Total		Water Power	Steam Power	Int. Comb. Engines
State	Companies†	Plants	Total Capacity Kw.	No.	kw.	No.	Kw.	No.	Kw.	No.	Kw.	Kw.	Kw.	Kw.
California	31	149	2,891,587	117	1,748,683	24	1,110,950	7	31,589	1	365	200	0	165
Oregon	23	66	338,246	41	175,424	16	156,010	5	1,712	4	5,100	2,030	500	2,570
Washington	29	71	920,134	47	707,384	14	208,202	3	603	7	4,127	2,206	970	951
Nevada	7	12	11,082	7	8,395	0	0	3	1,255	2	1,432	396	600	436
Utah	20	56	135,938	49	89,212	1	41,000	3	1,931	3	3,795	1,620	0	2,175
Arizona	19	44	143,621	11	87,050	9	30,790	17	4,870	7	20,911	0	2,657	18,254
New Mexico	17	33	86,813	1	200	12	76,861	16	5,301	4	4,451	808	1,617	2,026
Colorado	30	71	235,909	21	52,602	33	174,863	12	6,150	5	2,294	1,344	175	775
Wyoming	20	35	43,527	8	13,580	17	26,307	9	2,940	1	700	400	300	0
Idaho	18	47	228,130	40	224,140	3	1,100	1	1,300	3	1,590	980	0	610
Montana	7	28	310,409	15	299,360	6	7,665	3	1,448	4	1,936	268	643	1,025
11 Western States	221	612	5,345,396	357	3,406,040	135	1,833,566	79	59,099	41	46,701	10,252	7,062	28,987
United States	1,640	3,855	35,803,628	1,360	9,594,212	1,289	24,831,150	919	454,218	287	924,048	265,552	546,732	111,764

*Data courtesy U. S. G. S. Includes all plants generating energy for public use having a monthly output of 10,000 Kw.-hr. or more.
†Only companies and municipalities that have generating plants. Excludes those which purchase all their energy.

Opportunities for 1936 + + +

Let's Face the Facts

By GEORGE M. GADSBY
President, Utah Power & Light Co.

OUR industry has before it greater opportunities than have been offered for some years past. For years the electric utility companies and manufacturers have been educating the people to the advantages of electric service in the home and on the farm. The results have been almost beyond belief. I believe there is not a hamlet today of 1,000 people or over in the United States which does not have electric service. The extensions into rural areas were growing apace until the depression so seriously curtailed the income of the farmers that they no longer were able to wire their premises or purchase appliances. The farmers are now on the upgrade and will be found to be able to do much more for themselves; and, in addition, have government agencies ready to help. Where approached, local banks have generally been found willing to finance appliance sales through the plan of the Federal Housing Administration. Some companies have already taken advantage of this and through their own merchandising departments, as well as cooperating electrical dealers, have succeeded in placing a large volume of appliances without increasing the investment of company funds in merchandise and deferred payments on installment sales.

To reap the greatest benefits the utility companies should realize that some of our former practices must be streamlined and modernized to conform to the other developments which offer such opportunities for wide expansion of sales among present consumers.

Many changes can be made in our rates working toward simplification, but of much greater importance is a change in our sales attack so that we think in terms of services performed by electricity rather than rates per kilowatt hour. Our product is one that cannot be sold as, of and by itself. A kilowatt-hour as a lump of energy is worthless as well as being without physical form, shape or substance. The placing of kilowatt-hours on the bargain counter is futile unless the user can be brought to think of them in terms of what they will accomplish.

Among my own companies we have recently put into effect an objective rate with a half-price crossover rate. This plan means that customers will be able to purchase electricity for additional uses at one-half the schedule energy rates until, by extended use, they reach the new and very low objective rate. The announcement of such a rate plan, however, is only confusing and, if left to itself, will not sell one additional kilowatt-hour. Employee education is necessary and must be continuous. The rate must be backed by the sale of additional appliances and the more extensive use of present equipment. The electrical dealer must be interested. Home service forces must be augmented and carry the message to the consumer, not of a kilowatt-hour at 1½c or 2c, but of more lighting, refrigeration, cooking, hot water heating, by the cleanly sure method of electricity at a low monthly cost. I cannot urge too strongly the necessity of revising our sales thoughts and activities along these lines. It helps to make some striking changes in rate forms providing they lead ultimately to a greater simplicity and uniformity.

Utilities...

Dealer cooperation can be had by intelligently planned work with the dealers. Such cooperation will pay heavy returns in increased service, and if coordinated action can be secured, not only between a few electrical dealers and the utility company, but among the electrical dealers themselves, it will result in increased business for the dealer and a much more cordial attitude toward the company. The making of a friend does not mean the holding of a friend. There must be a continuing community of interest if a lasting friendship is to be maintained. It is the same in business and if dealer cooperation is to last, it must be because of constant contacts and mutual planning rather than a few scattered meetings at which differences of opinion may be discussed and temporarily ironed out.

The fundamental economic trend toward recovery is another great opportunity for extension of service. It is a significant fact that reviews of current manufacturing trends show people buying electrical appliances and engaging in travel rather than buying or building new homes. This may or may not be desirable but the concept of thrift and permanent investment has been upset by events of the past few years and more recently by our national leadership. It is fast becoming unprofitable to become rich. Last summer recorded a higher travel through our Western national parks than in any preceding year. These facts affect our customers both in their willingness to spend money—particularly for added comfort, and entertainment, while at the same time it is increasing the business of our commercial customers and must ultimately be reflected in industry.

Many new applications for electricity are in the making. Air conditioning is just getting under way. The conscientiousness which has been brought about for the need of better illumination by the happy invention of the sight meter offers amazing sales possibilities. Lighting was the first application of electricity in the home and having been with us ever since, it has been accepted with stress being laid only on securing more ornamental fixtures—often with poorer illumination! The development of the sight meter and the studies recently published showing the relationship between adequate light and health, are some of the most important things which have come to the electric industry in all its history.

The opportunity for development of comprehensive sales programs tied to new ideas for the stimulation of sales is important and will bring results in every class of service to every class of consumer. A few additional kilowatt-hours sold to present consumers is of much greater value than extensions to

GEORGE M. GADSBY

take on new consumers at present low averages of consumption. In viewing these opportunities it must be kept in mind that no matter how we may streamline our vehicles we shall not find any substitute for hard work and thorough planning. Above all I caution against the waste of time in seeking magic panaceas or uneconomic plans. Rental of appliances, fancy financing and trick credit schemes should be viewed askance. The automobile people point the way with their phenomenal sales on substantial down payment and limited time payments. Any departure from sound economics is unnecessary and will ultimately lead to trouble. Our job is to sell service and it can be done without resort to uneconomic schemes.

We must think in terms of our customer rather than trying to force the customer to think in terms of complicated rate schedules. We should work wholeheartedly with all dealers and agencies which help in increasing the use of electricity. We can plan well our sales activities so that they are seasonally appropriate and left to chance in no detail. Then, finally, we must work hard and the rich opportunities of the present will be open to us. At the same time many of the difficulties which might be insurmountable by direct attack will be found to melt away by the better understanding and more cordial relationship established with our multitude of customers—who also happen to be a majority of the voters.

Facts Support Optimism

By W. W. GLOSSER
Vice-President in Charge of the Pacific Coast Division, Hubbard & Co.

DESPITE some contradictory trends, there are enough favorable factors surrounding the electrical industry in the Pacific Coast states to cause the electrical manufacturers to view the outlook for 1936 with optimism. Foremost is the dissipation of the clouds of fear that caused hesitancy in placing orders, making future commitments or even anticipating future requirements. In its stead there have come courage and conviction regarding the future possibilities for the products and service which the electrical industry offers to the public. Coupled with this has been the increasing demand of the public itself for these products and services which have been reflected in 1935 sales totals for all branches of the industry that set new records for the depression period.

Encouraging prospects are not confined to any one field or any one region. Whether one sells to industry generally, to the home, to the farm, to the utilities alone or to all classes of business, the prospects are equally bright for better business during the months to come. Power company budgets for new construction are generally larger than they have been for several years past. Public demand is catching up with the industry and the only answer is increased facilities for service. Maintenance expenditures, curtailed during the worst years of the recent depression, will be expanded. Thus apparatus and equipment sales will no longer be almost entirely confined to government projects, which nevertheless will still be active purchasers in this region.

Industry sales efforts directed at the marketing of this territory's surplus power crops promise widening markets for all classes of electrical goods and devices. The fear that these surpluses would become a drug on the market is vanishing; instead the industry sees in them an opportunity for attracting new industries and new population with consequent expansion in the demand for electrical products. Utility sales programs are being intensified, with no market possibilities overlooked. Where these programs call for cooperation from the manufacturer, there should be a ready response.

Manufacturers...

Rural load development stimulated by government activity, promises to provide an increasing outlet for electrical products and services. Even though this region leads the rest of the country in rural electrification, the relative position of the farmer has been so improved that he can make substantial investments economically in additional electrical equipment and service. More rural lines will be constructed and many of those now in service require improvements to serve this growing load.

Of prime importance is the harvesting of the fruits of four years of intensive research by the manufacturers, the practical application of which has been held back by lack of purchasing power. There are countless new developments in apparatus and devices to insure the continuity of service, to improve service and to encourage new uses for service. Old products have been redesigned to meet new conditions. The electrical manufacturers as a group are showing the same courage and conviction that the automobile industry has displayed in bringing this new equipment to the market place.

Those who have recently studied the industrial situation in the region cannot help but be impressed by the optimism of most industries generally. For example for three years the steel industry here in the West has been operating to plant capacity and yet has been producing only a fraction of the requirements of this market. With improvement in the general business picture, it is conceivable that we may soon see considerable activity in this field. Industrial development is almost certain to occur in other fields. The proximity of the Pacific Coast to the undeveloped markets of the Far East, the vast natural resources of this territory and the increasing demands of our growing population are factors which portend future industrial growth.

Some key as to where the manufacturers will look for future business is given in the NEMA figures which show comparative statistics for 1934 and 1935. Increases were recorded as follows: appliances 24%; refrigeration, 14%; installation devices, 15%; roughing-in material, 10%; industrial apparatus, 25%; generation apparatus 29%; transmission and distribution apparatus, 20% and wire and cable, 30%. Only in the case of refrigeration, however, are the totals in excess of those for 1929.

Two factors influence the outlook unfavorably. One is the labor problem which has given the Coast an unhealthy

W. W. GLOSSER

reputation. The electrical industry, because it has had no labor problems of its own, may think that this problem is remote from its interests. Yet if transportation is paralyzed, if Eastern capital is discouraged from coming into this region, our industry will suffer along with all others.

Increasing tax levies on business and industry are problems not confined to this region alone. However, we here must join in the task of convincing the public that unproductive government spending must stop. The statement is made that taxes are taking upwards of 30 per cent of our national income. Business and industry cannot carry on profitably if this burden continues. Nor can the public either. The public must be shown that dollars diverted into the tax trough are dollars which cannot be spent for conveniences and comforts, for pleasure or for recreation. This tax problem applies to all branches of government and every man and woman in our industry can and should take an active interest in it.

If these two problems can be solved, this region should enter into an unprecedented era of growth and development in which the electrical industry should share profitably.

Sales Grow When They Get Thorough Cultivation

By MAYNARD M. STAMPFLI
Vice-President & Manager, H. E. Saviers & Son, Reno, Nevada

THE idea of asking a dealer in Reno for an opinion on the merchandising opportunities for dealers in 1936, I suppose, is based on the theory that if we can see any possibilities for good appliance business in Nevada then any other dealer in the West ought to be able to see twice as much opportunity. For Nevada certainly enjoys few of the advantages which other regions do, and yet we sell plenty of appliances and intend to sell many more.

Considering the fact that we have no surplus of power—in fact, the utilities here are scratching gravel to find more electricity to meet the demand that our sales of appliances have brought about—and that the rates are high, and that we sell at above list prices, it is reasonable to suppose that if we manage to sell appliances, any wide awake dealer can do likewise. Yet the dealers in central Nevada have sold a fine volume of electric ranges, refrigerators, washers, ironers, in fact all kinds of appliances. Last year in Reno there were 686 ranges sold, and 857 refrigerators, bringing the saturation of these appliances to 40 and 44 per cent, respectively. And all of these sales were made by electrical dealers, for the Sierra Pacific Power Co. discontinued all merchandising in 1932 and started a program of dealer cooperation. Your magazine carried an article on it last month. (Jan. 1936, p. 31). Let me say here that the utility companies throughout the country could obtain some fine ideas and a model of fair methods in load building from the Sierra Pacific Power Co. A lot of the credit for dealer success is due to the fine cooperation of our utility.

MAYNARD M. STAMPFLI

Dealers...

It may be asked, "how come?" The state has no industries except mining, livestock—and divorces. The latter at best only make a market for appliances indirectly through the hotels, apartments and houses in which "residence" is maintained during the necessary wait for "freedom." Mining is improving but certainly not booming. Livestock is raised far from the power lines.

Therefore the business we dealers must depend upon, have depended upon, has been that of the permanent residents in the state. We have had to cultivate these customers by an intensive personal service and interest and develop them as the purchasers of first one appliance, then another, and then another.

After all, this sort of cultivation is the only thing that keeps business coming along, good times or bad. The experience of our own firm is an example of this.

In 1928 when I joined the company, we were ambitious and expanding. We had the chain store idea. We had stores in Reno and Ely, Nev., and we opened one at Las Vegas. We had another in Susanville, Calif. When the depression followed the 1929 crash, we started pulling in. We closed our shops in Susanville and Ely and not long ago sold out our Las Vegas shop as a going concern. Our business was principally in radio sets and later in refrigerators. Now we have our main store in Reno and a branch in Carson City and do all of our business from here.

We did something which everyone told us was the height of folly right in the middle of the depression. We invested $12,000 in a complete remodeling of our Reno store and shops just before the banks closed. Yet that remodeling has done more to help us get business and work efficiently than any investment we could have made. At a time when everybody felt blue and down in the mouth it expressed confidence and faith in our town. And it has paid dividends since.

As a result we were able to do more business in appliances than the power company had been able to do at the peak of its boom of sales in 1928, and we hope to continue at this pace.

On entering merchandising of appliances from a paint and phonograph business we learned a costly lesson. We tried an experiment with ranges—selling them at $5 down and $5 a month. We did a whale of a business—about 150 ranges in 2 months, selling at factory list price. But we woke up to realize that we had lost money on each sale. If we kept up the pace we would soon sell ourselves out of business. There was no fun in doing that.

So we looked over the ranges that were being featured and decided to avoid these, and concentrate on a few quality models which weren't being widely publicized. On these we raised the list price a little, enough to pay freight, our sales cost, and profit. Since then our range sales department has been profitable. Our salesmen earn enough to stimulate their effort and our range business has been healthy and consistent.

Whenever competition calls attention to our high list prices we face the issue frankly. We lay all the cards on the table. We explain our overhead and

sales cost, recite what local activities we support and participate in, and put it up to the customer squarely. The customer is at liberty to buy elsewhere cheaper, but naturally will not receive the service which we have earned a reputation for giving. Nearly all of them prefer to buy from us. And they buy good grades of appliances too—not just the specials.

This leads me to remark that I feel the large manufacturers are making a mistake to emphasize the cheap or TVA lines they are making. There is danger of doing to ranges and refrigerators what this same sort of thing did to radio. A "Jalope" range forced on the market will discredit electric cooking and give a black eye to the business for a long time. When a family buys a range they buy something to last them several years. The investment is big enough to make them feel they should get long service from it. A cheap, flimsy range will eat up dealer profits in fussy servicing and wasted time trying to square things.

We can all do better in this appliance game if we kick the price up to a level that gives the dealer a workable profit. Then he can do a real job. A few dollars more a month will not stop a sale if the appliance is really sold.

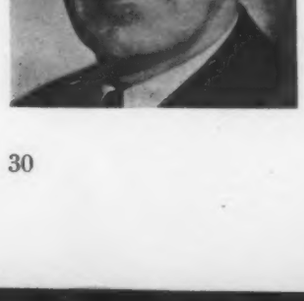
In fact, in our establishment our salesmen are trained to sell up. We even have a cheap model in our sales room to compare the qualities of the good model to in closing the sale. The comparison of quality has sold more refrigerators and ranges than price ever did.

So it boils down to this. Dealers can sell more appliances in 1936 if they will cultivate their townspeople more. Our users are our best salesmen. They bring us most of our prospects. We know everybody by name. Know lots of their family history and troubles, and thus we share in their occasional good times.

Dealers should go to extremes to give good service—personal service. They should sell their merchandise at sufficient margin to pay good salesmen and carry on a substantial business. Advertise aplenty. We have always done a consistent and persistent job of advertising and we know that it pays. Demonstrate thoroughly, and show the comparison between a first class and a cheap appliance.

In other words, cultivate the market thoroughly even if it is a small market, and it will grow better sales in 1936, or any other year.

A. L. STONE



The Need for and Lack of Cooperation

By A. L. STONE

President, Los Angeles Branch, Southern California Chapter, National Electrical Contractors Assn.; owner Stone Electric Supply Co., Los Angeles

AMONG the groups comprising the electrical industry in California it is conservative, I believe, to say that there are 100,000 individuals engaged in or dependent upon this industry for their livelihood. In the entire West the number is much greater.

I doubt if there is an industry in existence, the different branches of which are so vitally dependent upon each other for their very existence as in the electrical industry.

And in the light of this statement we find many who are not even electrically minded. In other words, they are not sold on what they sell. Each branch

Contractors...

seems to carry a chip on its shoulder and until our old reliable friend "Cooperation" gets trained to the point where he will go out and knock the chip off these said shoulders, we will continue to flounder, albeit the greatest opportunity in the history of our industry is now knocking at our door.

Perhaps it might be well to mention a few of these chips. For instance the contractor carries the chip that his unethical competitor is ruining his business, that the utility rates are too high for him to enjoy an all electric home, that the jobber is undermining his business by direct selling, etc.

The dealer carries the chip that the utilities' merchandising is ruinous to him.

The wholesaler carries the "chip of fear" that the pirate jobber and manufacturer are going to garner all the business.

The manufacturer carries the chip that Mr. Wholesaler isn't doing a big enough job for him so he seeks other outlets for his wares even to the extent of camouflaging his product and placing it in chain stores.

And the utilities carry several chips on their shoulders (of course their shoulders are big and broad and they can easily do it.) The first and foremost of these chips is—*The high cost of wiring.* "Oh, if that stigma could only be eliminated, ranges and water heaters would fly into homes like iron filings to the poles of a magnet," think our good friends the utilities.

And what does this all mean?

It means that unless these different branches find a way to cooperate in *fact*, rather than just in mere words, this chaotic condition will continue with ever increasing velocity and rapid and astonishing changes will result—among which I dare predict the following:

The utilities will engage in wiring of buildings and merchandising of appliances of all kinds, bought direct from the manufacturers.

The contractor will more and more be on the alert for channels whereby he can buy direct, thus short circuiting the jobber. This trend is apparent and is due primarily to the shortsightedness of jobbers whom I believe unintentionally are making it more and more difficult for contractors to deal with them through the erection of price schedule barriers, the most complicated network of schemes ever inaugurated, and passed down to our jobber friends by the manufacturers.

Using a trite phrase—"It would take a Philadelphia lawyer to understand them."

Dealers will seek to eliminate the distributor in order to compete with the utilities and so on down the line.

There never was a time when cooperation was so essential and so absolutely necessary. That orderly procedure can be attained there can be no doubt, but

there must be a willingness shown by each group to meet the others fairly and squarely face to face (not through a third party) and present their problems honestly and faithfully. When this is done, right and satisfactory solution can be expected and will follow.

Beneath differences of political method and manner of government there resides human kinship, requiring friendliness, decency, justice, fair play and honest dealing.

Let us turn to this human kinship more. Let us steer our ship clear of those well known shoals, greed, hatred, selfishness and fear. Then will cooperation become a reality and our industry will move forward on a united front.

We are engaged in a business that is highly important in the scheme of human comfort and efficiency. Our duty to the public is to render them the best possible service. This can only be accomplished by complete industry cooperation.

Here in southern California a great forward step has been taken in the interest of cooperation. I refer to the organization of the Electrical Development League of Southern California, comprised of all the branches of the industry. Each branch is represented on the Board of Trustees, which directs the affairs of the League through various committees. Great results are expected and other sections of the country may profit by observing the working of this League, whose life blood flows through cooperation.

The Electrical Age has just begun.

O. B. STUBBS

Another Year of Profits

By O. B. STUBBS
President, Stubbs Electric Co., Portland

TRUE to the prophetic words of R. J. Holterman in these pages last year at this time, the year 1935 showed a substantial increase in business for electric wholesalers on the Pacific Coast. This increase ran in individual cases from around 15 per cent to a much higher percentage, the average being probably between 20 and 25 per cent. Again it seems safe to predict that the year 1936 will bring us an over-all increase of almost equal proportion, or say, for the sake of conservatism, from 15 to 20 per cent.

This prediction is based on the belief that all classes of merchandise will continue to sell in equal if not increased volume, and that belated building activity, only recently commenced in some localities, will be accelerated during the coming year. Further, there should be a continuation and perhaps an acceleration in the process of ridding industrial plants of obsolescence with further modernization of these plants in lighting. Thus it seems that we may all expect to do better in 1936 in industrial equipment and in wiring and construction materials.

Harking back to 1935, I think it will be put down in the annals of the wholesaling business on the Pacific Coast as the year when the freezing effect of fear in the minds of people began to thaw out and release a flood of pent up buying power. Manufacturers and utility companies were quick to sense this changing attitude on the part of the buyer and stepped up their promotional activities accordingly. Nor can we deny that government spending through P.W.A., W.P.A., and A.A.A. and government financing through F.H.A. in some localities had its favorable effect. Further, it is likely that government acceptance and promotion of the idea that electrical appliances offered large values in comfort and convenience for the pursuit of the better life was also a factor. Nor should we fail to credit better selling on the part of dealers

Wholesalers...

generally. Whatever the reason, the fact is the public did buy electrical appliances in volume, and the wholesalers, performing their function in the scheme of distribution, geared up their organizations to meet the situation and participated in the profits.

All lines of merchandise were represented in the recorded increase from ranges, refrigerators, radio and the more expensive appliances down through washers, ironers, vacuum cleaners, table appliances, clocks, I.E.S. and other types of lamps to incandescent lamps. Perhaps the greatest increase was recorded in electric ranges, in some localities the sales of these being more than double the previous year—notably Portland where the institution of free range wiring was adopted by the utility companies.

In addition to merchandise, there was a lesser increase in the distribution of industrial and construction materials and inside wiring. This class of goods showed an accelerated increase toward the end of the year, which appears to be hanging over into 1936, giving promise that a substantial increase will be recorded by the end of the present 12 months period.

As to relations with other branches of the industry, we will always have with us chislers both among contractors and dealers and within our own industry. By and large, I should say, however, that relations were at present wholesome. I do not see that the discarding of the N.R.A. has had very much effect one way or the other on this aspect of our business. The lessons we learned in code making and administration did us all good and we are profiting from them now. Further, the general improvement in business conditions seems to have had a favorable effect on reducing the amount of chiselling formerly done by certain classes of dealers and contractors, and there is a tendency now among this class of business men toward abandonment of the "inferior-goods-at-rock-bottom-price" method of chiselling their way to success.

In looking over Mr. Holterman's article of last year, I am impressed with his conclusion, and I am glad to pay him the compliment of concluding in the same vein even to the extent of plagiarizing some of his words. No matter how rosy our prospects for 1936 may be, they will not be reflected in black on our balance sheets this time next year if we attempt to rely solely on taking orders. We must prepare our organizations to take advantage of our opportunities, and then we must sell. "There is no substitute for selling."

Who Is Too Stubborn?

I HAVE not said anything about this to Electra because I do not want to interfere in any way with her pleasure in driving the new car, but, privately, I have been doing some calculating to see just how many of my hard-earned dollars went to the automobile industry and how many were commandeered by Uncle Sam and his tax eating allies.

The California sales tax was very apparent; I know I paid that. Also, the property tax, based on 1.75 per cent of the rated value of the car, was in plain sight. The rest are not quite so plain, but I know they are there. One of the big items in the difference between F.O.B. and what we in California really pay is freight. How much of this high freight charge is due to taxes?

Then there is the three per cent federal tax slapped on at the factory. The manufacturer pays his full assortment of taxes like any other corporation—income, excess profit, capital stock, city, county, school district and all the other 57 varieties. I know that all of these were pro-rated into my new streamlined sedan.

Next we should note the many parts and accessories that are supplied by other factories—battery, tires, ignition system and the like. These no doubt were taxed three or four times before they arrived in my garage. Add a few tax items for telegrams, telephone calls, and gasoline to start the car on its way and we have a considerable total. I figure that it is approximately one-fourth of the cost as finally computed—something like $275 in taxes on a single transaction.

Brother, that is a lot of money. As I indicated at the outset, I have not said anything about it to Electra. Already she has mentioned the need for a new hat to match the car's color scheme and I don't want to discourage her. Electra is a cheerful companion and if she ever delves into economics she may become as glum as I am.

Some day, in the course of routine duties, I doubtless will meet one of these tax eaters—a snooping investigator of the regional bureau of this or that—with a salary of $3,000 and I am going to say to this economic barnacle, "I recently bought a new car for purely selfish reasons and, by virtue of that purchase and in the course thereof, I paid your salary for one month. Just think that over as you stand there with a supercilious air with its inference that you will pop me into the hoosegow if I fail to do your bidding. If it hadn't been for you and your ilk, my wife could have bought two hats and a new rug for the dining room. As it stands, she got only one hat. Presumably you got the other one and some other good before-Chicago democrat got the rug."

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THE REOPENING of the San Diego fair brings to mind the great mistake the electrical industry made with respect to the first edition of this delightful exposition. Here was a show which should have been dominated by the electrical idea. Beautiful architecture and gardens, fine lighting, public acclaim for Boulder Dam, an expectation of modernity—all combined to prepare the public for our story as it has never been told before. As it developed, the electrical exhibit played second fiddle to Ford, the Globe Theater and the Nudist Colony so far as public reaction was concerned.

This is said with due consideration for the splendid work of a few interested companies in southern California who put on a fine show by the liberal expenditure of their own funds. It was a good show, occupying about one-sixth of the space in a relatively small building. It was next door to the rubber shingle exhibit and across the aisle from the sewing machines. It was enjoyed by 305,000 people from a total attendance of 4,750,000 exposition visitors. This is in the familiar ratio of 16 to 1. Why did 15 pass our door for every one that entered?

It is too late now to change the situation and also it is too late to plan and construct an exhibit for the new fair. While lamenting our mistake, would it not be a good idea to begin planning for the coming San Francisco fair with the idea of having something there which will be truly representative of our business?

Good exhibits cost money but their value depends far more on the ingenuity that goes into them. I wonder if it would be in order for the president of the Pacific Coast Electrical Association to appoint a San Francisco Fair Committee to go to work at once in gathering ideas and making preliminary plans for a show that will really click?

•

WITHIN a few days the P. C. E. A. problem contest will close. What will the harvest be? What new ideas will be advanced about removing that great stumbling block which is discouraging the sale of electric ranges? How can distribution costs be lowered? How can industry cooperation be improved?

When these and similar questions are asked, I am tempted to inquire, "Is not the electrical industry capable of doing what the automobile industry has done?" There must be a screw loose somewhere.

The other day a friend of Electra's was visiting with me. She had been given a waffle iron for Christmas and, as there was no outlet handy in the dining room, she had a contractor come out and make an estimate. His price was approximately $16. Now he knew and I know why it was necessary to charge that much—but she didn't and she was all stirred up about it. So she went to the five-and-ten, bought some cords and gadgets and put in her own outlet.

Here's what she said and I'm passing it along to you. "The trouble with you fellows is that you are too darned stubborn. You're rich, your business has always come easily and you've never learned how to get the customer's point of view. The only reason they use your service is because they want it. You don't make it easy for them to get it."

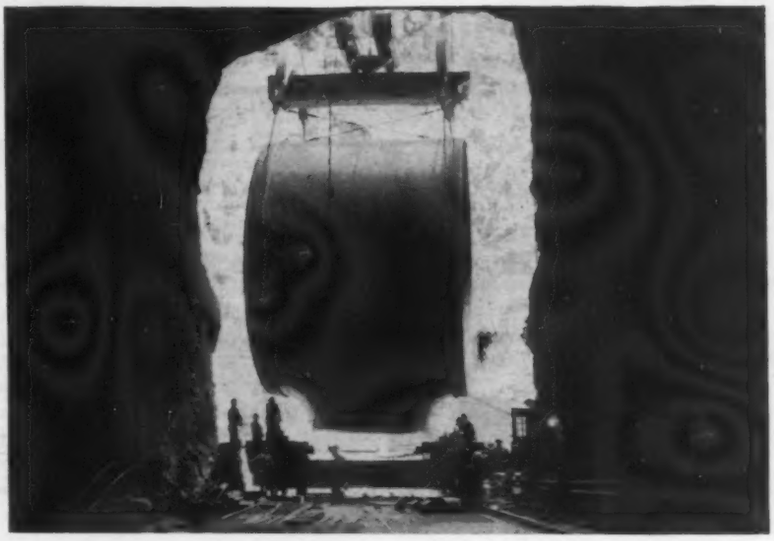
I know that a manufacturer would not like to be called stubborn for advocating the use of rigid conduit and ten-gallon switches. And the inspector would resent being called stubborn for doing what he thinks is proper to protect the public's interest. And the power company may dislike being called stubborn because its complicated rate structures antagonize the world at large. And the dealer should not be called stubborn because he is obliged to live with all these restrictions and somehow eke out a tiny profit.

Yet, when we put them all together and shake them up, maybe the conglomeration *is* stubborn. That's what Electra's friend thinks and this critical lady, multiplied by several million, constitutes our domestic market. If they are all of the same mind, it is time to pay attention to what she said. "You're too darned stubborn."

Panorama of the Bonneville project on the Columbia showing the wide sweep of the river where the dam is being erected. In the center may be seen the newly completed power house structure and, at the immediate left, the ship locks which justify charging part of the project's cost to improvements in navigation. At the extreme right may be seen the cofferdam projecting half way across the main channel. Inside the cofferdam are the concrete foundations for the dam proper. When one half is completed the cofferdam will be built out from the Washington side to complete the other half of the dam

1935 Passes In Review

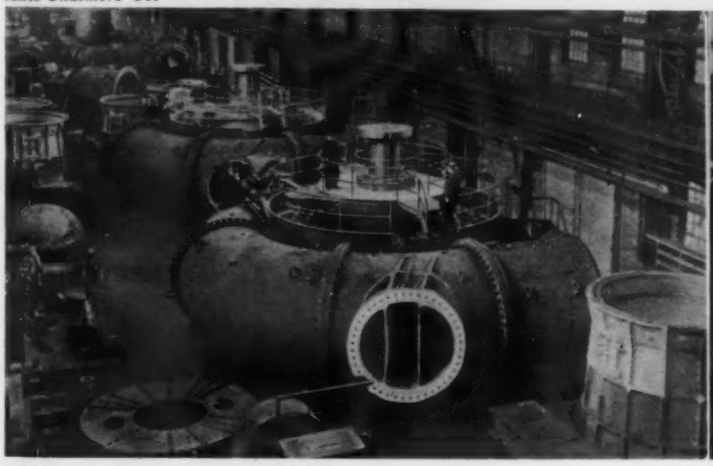
ELECTRICALLY speaking, 1935 was a year of significant development. During the short twelve months' period many new devices were presented to the industry, new concepts were given practical application, and new theories suggest a glimpse of what may be expected in the future. The industry manifested a lusty growth indicative that it is by no means mature. Literally thousands of new devices and improved designs of older equipment and apparatus were made available during the year. So multitudinous are they that a description of each is impossible, but collectively they can be interpreted to determine significant trends in the progress toward greater electrification. The achievements of 1935 pass in review.



Bringing a "T"-section of the Boulder Power House penstocks through the adit in the Nevada wall of the canyon

Left—Two of the first four 115,000-hp., 180-r.p.m. hydraulic turbines built for the Boulder Dam power plant. These units are now being installed at Boulder Dam. Right—One of the 82,500 kva. generators for the Boulder Dam units assembled on the factory test floor. The men in the picture provide a means of calculating the immense size of these units

Allis-Chalmers Co.



General Electric Co.

Boulder Dam and Power House near completion as 1935 ends

GENERATION—*Trend continues toward larger units — Higher steam pressures adopted for plant modernization — Automatic load control used to promote economies in most new plants*

FROM a practical standpoint, an achievement of the year was the successful completion of the world's largest hydraulic turbine generating units which are now being erected in the power house at Boulder Dam. The four hydraulic turbines for these units, built by Allis-Chalmers and rated at 115,000 hp., operate against a net effective head of between 475 and 480 ft. The generators which they drive are each rated at 82,500 kva., 180 r.p.m. and will generate power at 16.5 kv. The generators, built by General Electric and Westinghouse, have an extremely high flywheel effect, a low reactance, and a high short circuit ratio to increase the stability of the generating transmission system necessary to transmit the power from Boulder Dam to Los Angeles. Electrically and mechanically these huge units exceed by far the upper limits heretofore thought to be practical. Their successful completion is an outstanding achievement in hydro-electric design.

Another important advance in hydro generation was the installation of a 36,000-kva., 87.5-r.p.m. 13.8-kv. waterwheel generator in the Joe Wheeler Station of TVA. This unit deserves mention because it is of the outdoor type, the largest yet constructed for operation in the open.

Also during the year Micarta was substituted successfully for lignum vitae as an underwater guide bearing for a 65,000-hp. vertical waterwheel generator. The moulded plastic has a lower coefficient of friction, a longer life, and is stronger than the heavy tropical wood which has been in use for over a hundred years to line underwater bearings of all kinds.

Developments in steam power generation crystallized into certain definite trends during the past year. The economies and practicability of high steam pressures have been demonstrated and new plants larger than 50,000 kw. almost universally have adopted high initial steam pressures. During the year the largest single shaft generator yet built was placed in operation. This unit, now running at the Richmond plant of the Philadelphia Electric Co., is rated at 175,000 kva., 1,800 r.p.m. and takes steam at a maximum of 450 lb. pressure, 850 deg. F. It is a two-cylinder, straight reaction, single-flow unit having three stages of feedwater extraction and three stages of moisture extraction. Also of interest is the fact that the hydraulic governor actuating medium is a non-inflammable fluid

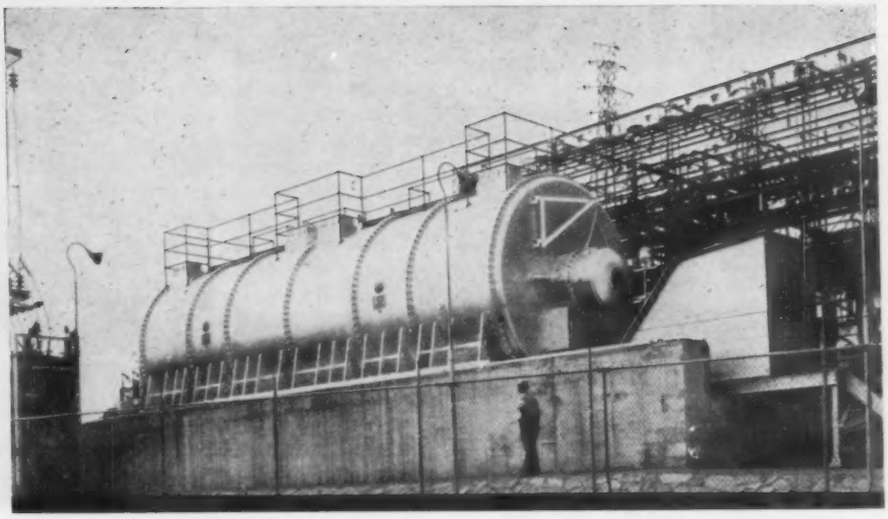
Westinghouse Electric & Mfg. Co.

Stacking the iron in the stator of one of the Boulder Dam generating units. These generators are 40 ft. in diameter, 22 ft. high and weigh approximately 900 tons

Under the powerful electric lights operations at Grand Coulee Dam continue night and day. In its ultimate form this project will be almost three times the size of Boulder Dam, but as yet its status as a power producer for the Northwest has not been established

known as "Aroclor", used to minimize the fire hazard which is always present when oil (with an ignition point around 500 deg. F.) is used near steam pipes carrying the high temperature steam characteristic of modern plants.

In steam plant modernization, the adoption of high pressure "top" units exhausting at from 250 to 400-lb. pressures into the steam lines of existing units has become a popular means of securing additional output with the economies incident to the better heat balance provided by the high pressure system. Coincident with the development of high pressure units is the improvement in automatic combustion, feed water and draft as exemplified by the systems of the Bailey Meter Co., Leeds & Northrup Co. and other manufacturers specializing in power plant equipment.



General Electric Co.

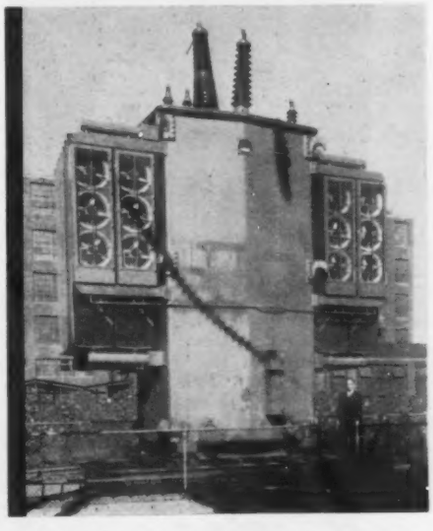
The first hydrogen-cooled frequency converter installed out of doors went into service in 1935. This unit is rated 20,000 kw., 300 r.p.m., 60 to 25 cycles, and its design offers many economies over former practice

TRANSMISSION—*Boulder Dam-Los Angeles 287-kv. transmission line sets new record for commercial potentials—New high voltage underground cable transmission system introduced to industry—First commercial installation of high voltage direct current transmission with electronic tubes made in 1935*

TRANSMISSION practice advanced with the completion of the 287-kv. transmission line from Boulder Dam to Los Angeles, the highest voltage transmission line yet constructed. Its supporting structures are of conventional design modified to provide proper clearance for the potential used and mechanical strength for the extra loads imposed by the heavier copper and longer insulator strings. The use of the hollow segmental Hedderheim copper conductor marks the first large application of this conductor design in American transmission practice.

A special "free center" clamp was developed for use with this cable by the Los Angeles Bureau of Power and Light engineers to minimize vibration fatigue. This clamp consists of an outer shell suspended by strap hangers on knife-edge trunnions. At each end of the shell and supported by it on knife-edges is a metal saddle upon which the cable rests, the supporting points being exactly one-half of a cable spiral pitch apart. At the center of the clamp and normally free from it is a clamping piece consisting of a double conical wedge adjacent to the cable which fits into the two halves of the clamping piece itself. Ordinarily the cable merely rests upon the two saddles at either end of the clamp. Should the cable break, the center clamping piece moves against a stop on the outer shell driving the conical wedge to exert clamping action of the cable. With this type of construction bending moments due to vibration around the fixed position are limited, being distributed almost over a full pitch of the spiral of the cable segments.

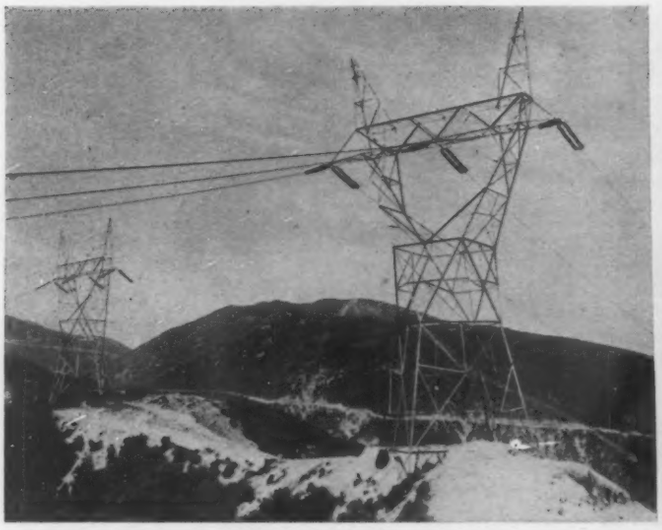
One of the seven 48,750-kva., 287/132-kva. auto-transformers for the receiving end of the Boulder Dam transmission line. With the forced air blower system these units will handle a peak load of 80,000 kva. each for 2 hours

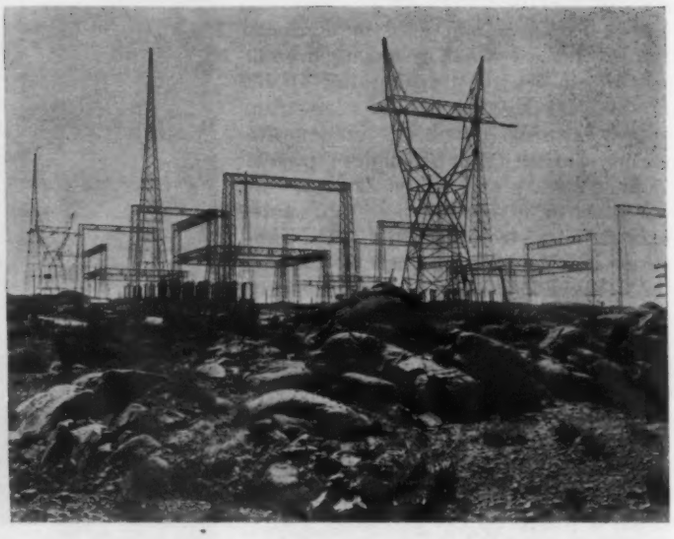


Westinghouse Electric & Manufacturing Co.

Of the equipment associated with this transmission line, the transformers at the sending and receiving ends are of interest. At Boulder Dam power house two banks (with one spare unit) of three 55,000-kva. water-cooled, 16.5 kv. to 287.5 kv. Y single-phase transformers, constructed by General Electric Co., are installed. Each bank has sufficient capacity to handle the output of two of the huge Boulder Dam generators operating in parallel. These transformers are of the circular coil, shielded, non-resonating type and are designed to withstand an impulse voltage sufficient to flashover an 88-in. rod gap. Electrically and physically they are the largest transformers ever constructed occupying a floor space 13x21 ft. with an over-all height of 32 ft. Each unit weighs 385,000 lb. of which 150,000 lb. is oil.

At the Los Angeles end of the transmission line seven Westinghouse single-phase auto-transformers are installed to handle the power coming over the two 287-kv. transmission circuits from Boulder Dam. These auto-transformers also claim a world's record for size. They transform the voltage from 287 kv. to 132 kv., the voltage at which the Los Angeles Bureau of Power and Light transmission system operates. Each unit has a capacity of 48,750 kva., self-cooled, but with the air blast cooling system of fans and radiators in full operation, the full load continuous capacity is raised to 65,000 kva. with a peak rating of 80,000 kva. for two hours. These transformers are designed to be inherently self-protecting from lightning surges. The impulse tests to which they were subjected at the factory exceeded 1,600 kv.





(Left)—Completed section of the L.A. Bureau of Power and Light's 287-Kv. Boulder Dam Transmission line showing single circuit tower construction. (Right)—One of the sectionalizing stations in the line

One of the most interesting developments of the year and one of the most provocative of discussion was the 30-kv. direct current transmission system successfully placed in operation by the General Electric Co. It was the first such transmission system to be accomplished in a commercial capacity by means of electronic tubes. Alternating current power is converted into high voltage constant-current direct current and at the receiving end reconverted into three-phase, 60-cycle alternating current at constant potential. Features of the development include the following factors: the amount of power flow to be under the control of the operator at all times; no wattless current is transmitted and the amount of power flow under short circuit conditions is reduced instead of increased as the voltage is reduced at the fault.

The successful application of this system suggests that longer transmission lines with fewer problems from stability, power flow and other difficulties inherent to alternating current transmission may be constructed in the future. When the direct current transmission system has been developed to a point where it will handle large blocks of power, its directional control characteristics suggests that it may be an economical means of transferring power between two systems. If such a development is possible, the many problems will be eliminated from tie line control practice.

Associated with transmission practice is the problem of tie-line regulation. Leeds and Northrup have brought out a complete automatic load and frequency control system which operates on simplified principles and which performs a variety of functions. It will regulate the load passing between two systems in a fixed amount or will permit mutual assistance in handling load swings for short periods. While the tie line load can be predetermined and varied from day to day or longer periods, the control is arranged so that generating units on each system take care of the load swings on each system and are not affected by the other system's swings as long as the interchange is maintained at the desired value.

Another significant development is that the Okonite Cable Co. known as the "Oilostatic" cable system. This system abandons the lead sheath as a means of mechanical protection and of preventing the entrance of moisture. Instead a simple cable is drawn into a pipe in which oil is kept under high pressure by means of simple apparatus. This system does away with the underground duct line with its many joints and manholes and opens up future possibilities for a wider application of underground transmission and distribution. Low right-of-way costs, a small space factor for the transmission capacity, and the high voltage ratings possible with the design are features which appeal to engineers. In addition the ability to pull longer lengths of cable permits the use of fewer joints and manholes enabling the installation to be made more quickly and economically than the duct line high voltage underground cable systems now in current use. Operating features favor the new system because sheath losses and sheath potentials of single conductor cables are practically eliminated. A stable installation with complete mechanical protection also is obtained. Heat dissipation is facilitated which increases the current carrying capacity as well as the ability to absorb heavier peak loads for short periods. The pipe also affords an ideal return for ground current which facilitates relay operation.

General Electric Co.

Direct current transmission became practical with the development of the constant current, direct current transmission system using electronic tubes at the receiving and sending ends. This shows Dr. Alexanderson, the originator of the system, talking with one of the G. E. engineers in front of the bank of thyratrons forming a part of the first 30,000-kw., 13-kva. direct current transmission installation

For the conventional lead-covered cable the vacuum lead press now used by the larger cable manufacturers typifies the improvement in quality and control of lead sheathing for underground cable. Under this process, lead is admitted to the press and extruded under high vacuum, thus producing a sheath of high quality without the formation of oxide during the process. The vacuum press method not only prevents the creation of red lead during the extrusion but also prevents the lower degree of oxidation and makes all welds, flow lines, etc. of maximum perfection.

Nineteen thirty-five also witnessed the installation of the first frequency

changer incorporating the advantages of operation in hydrogen. This 23,500-kv. 0.9-power factor, 12,000-volt set, built by General Electric Co., takes advantage of the more efficient cooling of hydrogen thus permitting a saving in size of the unit for the same power rating. Windage losses are 10 per cent less, the formation of corona is eliminated by the absence of oxygen, and the investment is reduced by capitalizing on the weatherproof characteristics of the enclosing case. This made it possible to install the unit out-of-doors and save the cost of a building.

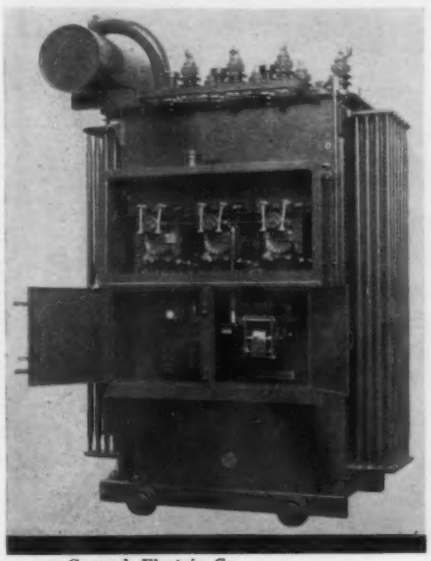
Carrier current sytems gained appreciable popularity during the year in a variety of new applications. Relaying and supervisory control by means of carrier current are simplifying system operation, the most significant development of the year being the substitution of carrier current for the ordinary pilot wire used in operating directional relays to isolate faults in the transmission line. The largest and most important application of this system is on the Boulder Dam transmission line which is being equipped by General Electric. Carrier current also has been applied to this line for the purpose of communication with line patrol crews, the first time carrier has been so used in this country.

A carrier current installation made by the Westinghouse company indicates the flexibility which can be obtained. A 120-mile, single-current transmission line served a large customer requiring high continuity of service. In the past lightning has been the cause of 95 per cent of the outages on this particular line and it was shown that if the transmission line were de-energized for 40 to 60 cycles following a lightning stroke the fault would clear and service would automatically be restored without causing the principal motors to shut down. The only way it was possible to attain sufficiently rapid reclosing of the circuit breakers economically was first to open simultaneously both ends of the line since power could be fed into the fault at either end. The carrier current system installed to make this possible is the first use of this equipment in conjunction with automatically reclosing breakers.

SWITCHGEAR—*Arc extinction principles extended to permit circuit interruption by 287-kv. breakers in less than 3 cycles—Load ratio control and unit type substations continue to gain in popularity — Metal-clad switchgear being adopted for industrial plant installations*

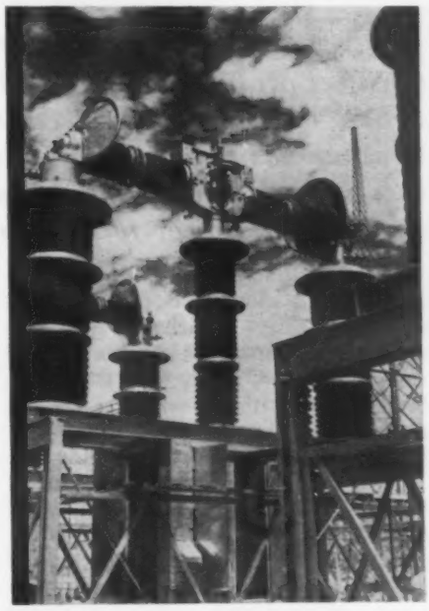
SWITCHGEAR development during 1935 kept pace with higher voltage requirements not only in physical capacity but in improvements in the various arc-quenching principles. Probably most important is the new application of the oil blast principle used for the first time in the 287-kv. oil circuit breakers in the Boulder Dam transmission system. These units, designed by General Electric are radical departures from the conventional design of high voltage oil circuit breakers. The conventional tank is eliminated and three separate single-pole units have been substituted, each single-phase breaker having a new operating mechanism consisting of eight breaks in series, each break being subjected to a blast of oil when the circuit is interrupted. Electrically these breakers are rated at 2,500,000 kva. and will interrupt a 5,000-amp. current at 287 kv. in less than three cycles. The three single-phase units of this design weigh less than one-half of the conventional type of breaker for this rating, the oil content being approximately one-tenth of that used in the tank-type breaker.

Load ratio control became more compact as indicated by this photograph of a three-phase regulating transformer rated at 15,000 kva. The unit was built for the Public Service of Colorado



General Electric Co.

The air-break switches used in connection with the 287 kv. double bus at Boulder Dam also are of interest not only for their size but for their design. Built by the Bowie Switch Co., these switches were built to specifications which stated there should be no visible corona at 200 kv. Under actual tests visible corona was not observed until a far higher voltage had been applied to the switch. The motion of these switches is of interest because it exemplifies a single but unusual use of linkages to obtain desired results with a minimum number of moving parts and low operating power. All insulators to which incoming lines attach are rigid, thus obviating the very undesirable feature of rotating joints where the line is attached to a moving insulator. There are three insulators for each pole of the switch, a clip insulator, a rigid hinged insulator and a rotating insulator pionioned in a bridge which is rigidly attached to the hinge insulator. The blade which is pivoted on this bridge is operated by means of a crank on top of the rotating insulator which, in turn, is moved by a connecting rod with a universal joint at each end to allow for the different planes of action generated by the



This view, taken by T. M. Blakeslee, of the Los Angeles Bureau of Power and Light, shows one of the new General Electric 287-kva. oil circuit breakers, installed at the Victorville switching station of the Boulder Dam transmission line. These units utilize the oil blast principle but eliminate the conventional type of tank, saving both oil and weight. They will rupture up 5,000 amp. at 287 kva. in less than three cycles

rotating insulator. Advantage is taken of the fact that when this crank passes through dead center there is no appreciable blade motion and at that time the movable insulator crank sets the high pressure between the blade and the stationary contact tip through rods and connections which move a pair of small links at the blade end from an inclined position to a position vertical to the blade end.

In the course of this "toggle" motion they impart a very high pressure between the contact surfaces. The movable contact at the end of the blade is protected by an oval corona hood. These covers are equipped with doors which normally enclose the inner parts of the blade end but which open inward when the blade is brought down over the stationary contacts. In this way they form a guard against corona and dirt and prove to be a very effective sleet hood.

Metal clad switchgear and unit type substations which are factory assembled were popular during 1935. More operating companies are taking advantage of the reliability and ease of maintenance of the metal clad equipment and the ease of installation and flexibility of the unit type substation. The gradual adoption of these two developments by the industry will tend to simplify, standardize and eventually lower the costs of expanding transmission and distribution sytems. The use of metal clad switchgear is no longer confined to central stations as a 1935 development of simplified designs for lower voltage and capacities was quickly adopted by industrial engineers.

DISTRIBUTION—*Load growth intensifies problems of regulation and "flicker" on urban distribution circuits — Low cost rural equipment introduced on a large scale—Capacitors enter distribution field as a means of improving voltage, power factor and capacity*

DISTRIBUTION developments occurred along two parallel lines during the year. In urban areas better regulation and more reliable service were objectives which had to be coordinated with the generally increased loads enjoyed by practically every utility in the country. The growing use of motor loads in the home has made lamp flicker a problem almost equally important as the voltage regulation which has been adversely affected by the increased domestic consumption on many urban circuits. To combat the former, larger transformers, conductors and additional regulator capacity have been installed in many cases but one manufacturer has brought out a small inexpensive cutout for transformer secondaries which permits the interconnection of the secondaries from several transformers and thereby produces material improvement both in voltage and alleviating the effects of starting currents required by refrigerator or oil burner motors.

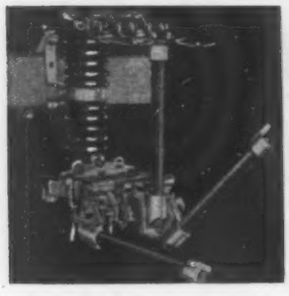
Regulation has been improved by a variety of means, notable among which is the growing use of pole-mounted capacitor units on the distribution system to improve the power factor, increase the capacity of the system and maintain voltage at important load centers. Reliability has been improved by building protection from overloads and surges into the transformer itself and by coordinating the lightning protection on the primary side with that of the secondary either by tying the neutral to the ground side of the lightning arrestor directly or through a small air gap. Significant also is the fact that distribution and power transformers, filled with an inert cooling and insulating medium, such as Pyranol, have been approved by the National Electrical Code for installation in buildings, mines or other enclosed places without the necessity of a special transformer vault, thereby materially reducing the investment costs of many transformer installations.

Wolf Electric Works, Inc., Portland, Ore.

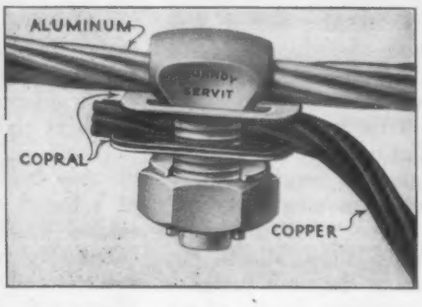
A low-cost rural transformer typical of the equipment designed for low-cost rural lines is arranged for mounting without a crossarm and with a dead-end rack as an integral part of the unit

Developments in underground distribution have been confined largely to improvement in existing equipment. More attention has been given the feasibility of low cost underground systems

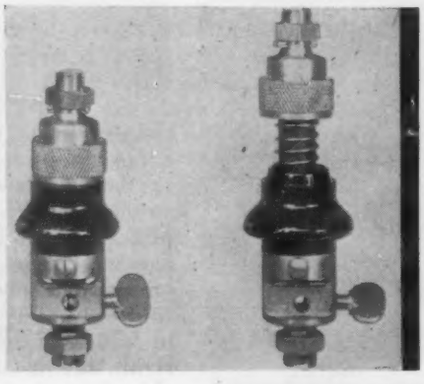
Many small useful devices have been developed to help the distribution engineer. Left to right—a repeating fuse for rural feeders; a special connector for aluminum to copper cables which eliminates electrolytic action; a new lightweight secondary fused cutout which provides protection on the low side of distribution transformers and permits banking of secondaries to improve service; a suspension fuse providing a tap and fuse-protection for rural extensions



Jas. R. Kearney Corp.

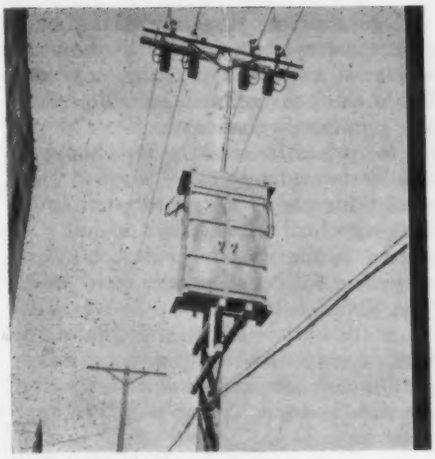


Burndy Engineering Co.



General Electric Co.

Schweitzer & Conrad, Inc.



General Electric Co.

Pole-mounted capacitors gain in popularity for improving the voltage and capacity of distribution systems. Here is a 180-kva., shunt-type capacitor, installed on a 4-kva. distribution system

in areas where overhead structures are undesirable or prohibited by statutes. An important contribution in this field which uses trench lay cable and a new buried transformer designed and installed by the Pacific Gas and Electric Co. underground engineers will be described in an early issue of ELECTRICAL WEST.

An asbestos-cement conduit for installation underground without the use of a concrete envelope and known as Johns-Manville transite conduit entered the market in 1935. It has a high strength and combines the qualities of being incombustible, rot and corrosive proof, and non-magnetic with light weight and a hard smooth interior surface which facilitates cable pulling. Another new product which was placed on the market was a plastic seal for duct openings. This material remains permanently plastic over a long period of time, is insoluble in water, unaffected by gases or condensates and can be salvaged and reused many times.

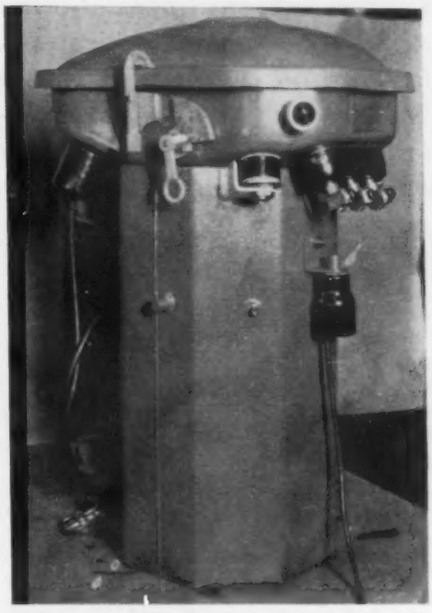
Transite was also adapted to another use in the electrical industry with its construction in a new block form. This product consists of a porous core with solid transite faces which gives it a low thermal conductivity, incombustibility, and light weight suitable for construction of fireproof barriers and electrical housings.

Radio interference proved to be another problem which commanded increasing attention in 1935. A development which has satisfactorily decreased the noise level due to insulator troubles is a new design know as the line post insulator. The unit is designed to be used in the same way as the high voltage in pin type insulator and consists of a hollow, closed-end porcelain post of the fog type cemented into a malleable iron base which rests on the cross-arm and is held in place by a thread like that of the ordinary pin. In addition to limiting the necessity for frequent cleaning and providing freedom from radio interference without resort to special treatments, this insulator, in effect, increases the pole height giving substantially larger clearances as compared with normal high voltage construction.

No phase of electrical development

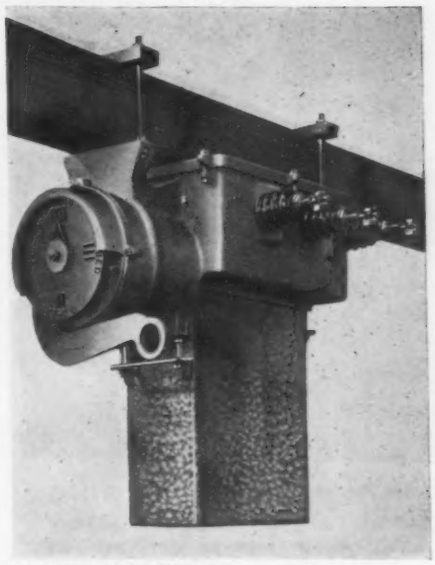
An installation of transite conduit buried directly in the ground without a protective covering is typical of the advances made in the design of equipment for underground systems

Johns-Manville Corp.



Westinghouse Electric & Manufacturing Co.

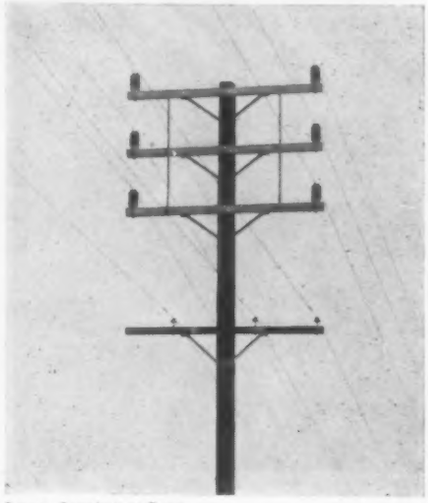
Distribution transformers become more independent. This new design has built-in self-protection against lightning and gives a warning by turning on the red light when the winding temperature approaches a high limit. If the visual signal is ignored and more load is added, its self-contained circuit breakers disconnect the secondary load. The light remains lighted after the breaker has operated to assist locating overloaded transformers on the system



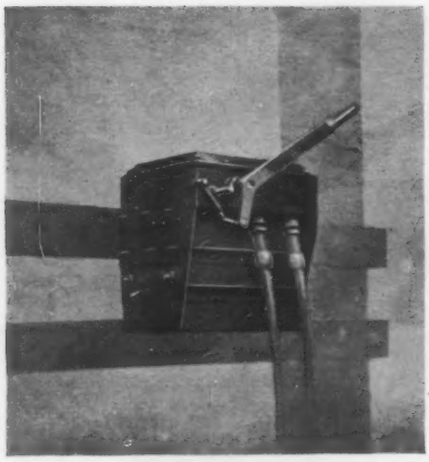
Pacific Electric Mfg. Co.

This new pole-top oil circuit breaker for rural lines provides one, two or three automatic reclosures with an extremely low tripping current if desired. Low in cost, it is designed for dependable service under all conditions and typifies the ability of electrical manufacturers to design to meet new conditions

The line post insulator was introduced during 1935. It reduces radio interference, eliminates the need for frequent cleaning and, because it is mounted on top of the crossarm, increases clearances over conventional construction



Lapp Insulator Corp.



Pacific Electric Mfg. Corp.

A new compact single-pole subway oil circuit breaker for use on 2,500/4,000 v. underground systems incorporates expulsion chamber contacts and has an interrupting capacity of 25,000 kva. at 2.3 kv., although its size is not much larger than the conventional subway fused cut-out

during 1935 received more attention than that of rural electrification equipment. Spurred by the government's insistence for low cost rural lines, the manufacturers have brought forth a multiplicity of new designs and new ideas calculated to minimize rural distribution costs. Practically all electrical manufacturers of distribution apparatus have brought out lines of new equipment suitable for low cost rural construction. Among the developments of the year are the small single bushing transformers, light weight, single-pole, reclosing circuit breakers, inexpensive fuses of both the repeating and non-repeating type and small pole top regulators.

Various types of high strength conductors are now on the market to meet the demand for increased spans for rural lines. Among the new developments is an eight-strand aluminum cable steel-reinforced for rural distribution lines. By using a high strength steel core, only slightly larger than that formerly used, the diameter of this cable is only 3 per cent greater but its ultimate strength is 25 per cent greater. Indiana Steel & Wire has also developed a light-weight high-strength steel alloy conductor.

Regulation in rural areas has been given greater attention both by the manufacturer and the operating engineer. While the conventional induction voltage regulator remains the most popular for urban feeders, the tap-changing, step-by-step, load ratio control has gained increasing recognition in areas of lighter load densities where bus regulation is the most economical means of providing better service. In addition, a variety of small pole-top regulators for individual rural feeders have been developed, even to the point where there is now available a small capacity, one-step booster having a 5 per cent range.

A plastic seal for duct openings offers another means of making manholes more troublefree

Johns-Manville Corp.

METERING—RELAYING

Carrier current applications grow in number and diversity for system protection—High speed relaying and automatic reclosing practice advance with needs for better service—New sequence extended to include polyphase metering—Electronic devices challenge conventional designs for new applications

FOR commercial applications, developments in metering were confined largely to refinements of existing designs to obtain even greater accuracy and reliability. The trend toward new sequence metering accelerated during 1935 due largely to the continued prevalence of current diversion. Rapid adoption of the new sequence was made possible by interchangeability of parts to fit both existing and new meters of various makes. The widespread use of the single-phase watthour meter for new sequence applications has given rise to the recent development of a new two-element detachable meter adaptable for the new sequence mounting.

Low offpeak rates have stimulated the development of less expensive meter installations for measuring consumption under these varying schedules. A new form of meter, developed by General Electric Co., combines in one case a standard watthour meter element, a two-rate register and an associated transfer mechanism whereby one or the other set of dials is advanced by the watthour meter. The transfer from one dial to the other is made in accordance with a predetermined adjustable time schedule by the use of a time switch.

Developments in graphic meters include a new Esterline-Angus instrument which embodies a standard wattmeter in conjunction with a phase shifting network which supplies the recording wattmeter with a lagging potential corresponding to the average power factor of the circuit. By means of three taps on a phantom load the instrument is made to cover a range of power factor from .56 to .94 with a low error.

For lightning studies the automatic high speed oscillograph is providing direct savings in system maintenance expense and has enjoyed increasing popularity during the year. Lightning studies have been facilitated by a new surge crest ammeter which measures crest values of surge currents of unidirectional polarity by means of a new technique employing magnetic links installed in the legs of the tower. With suitable calibration charts the magnetization of these links due to uni-polarity surges can be determined directly.

The analysis of system faults by means of electrical components has been facilitated with the development of a new symmetrical component meter which indicates many of the quantities necessary for the calculation.

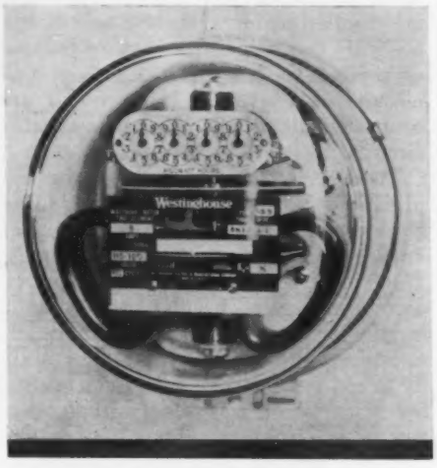
New developments for system maintenance engineers include a live line insulator tester developed by the Railway & Industrial Engineering Co. which employs a direct reading meter mounted on a contact head which in turn is fitted into a safety handle. Merely by making contact between adjacent insulator elements it is possible to read on the meter whether or not the insulator is in good condition. A new type of phase rotation indicator weighing but 12 oz. and with no moving parts simplifies phase identification. It will be found useful in three-phase testing of meters and motors.

Two interesting new instruments for the power plant operator and industrial heating engineer are Leeds & Northrup Thermotube temperature controller and the Potentiometer-electrometer. The former consists of an assembly of an alloy target tube and an air-cooled aluminum head. The tube is placed directly in the furnace or oven and heated to the temperature there. Radiation from the end are focused on a thermocouple in the head casting, the thermocouple being connected to an indicating or recording temperature meter. The potentiometer-electrometer is a self-contained, portable unit for measuring hydrogen-ion concentrations and oxidation reduction potentials. A feature of the design is the use of a thermionic tube which makes possible the use of a compact pointer galvonometer.

Relays and relaying technique and practice made great strides during 1935. Designs to speed up relay operation conform to the new requirements for greater stability and reliable sectionalizing of faults which are essential to good operation with modern systems having high power concentrations and increasingly complex transmission and distribution networks. Illustrative of this is the Boulder Dam transmission system where stability requirements make it necessary to clear a fault on the line in less than three cycles. Relays which initiate circuit breaker action to isolate the fault have been developed to operate accurately and reliably in a small fraction of a cycle.

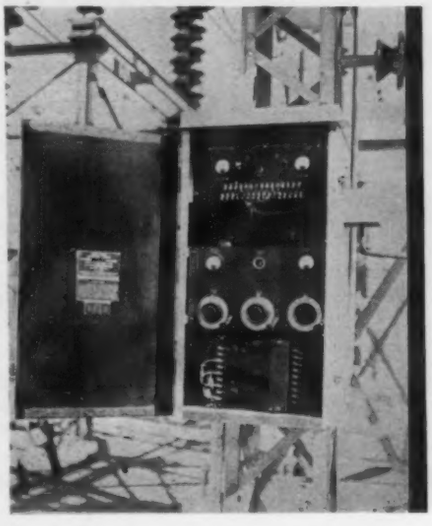
To meet the trend toward higher relaying speeds, new combination relays have been placed on the market by the manufacturers which incorporate instantaneous tripping for faults in the zone nearest the relay and tripping times proportional to the distance for faults beyond the immediate protective zone of the relay.

Also significant is the increased use of electronic tube applications in conjunction with relays to obtain desired characteristics. Typical of this technique is a new ground detector relay which consists of a coupling unit and a relay unit. The relay unit, consisting of a potential relay with a single set of circuit closing contacts, a condenser and a resistor, all mounted together on a universal base, is operated by a Thyrotron tube which in turn is operated from a coupler connected directly across one phase of a three-phase, ungrounded high voltage transmission line. Electronic tubes also have been used for automatic synchronizing and other operations dependent upon incremental changes of voltage or current or the rate of change of a quantity can be amplified to initiate the operation of equipment.



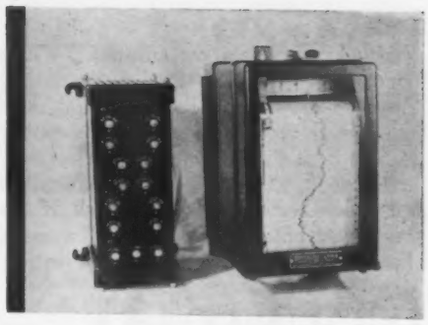
Westinghouse Electric & Mfg. Co.

Two-element watt-hour meters are now available for the new sequence metering installation, using the same cases and base but a slightly different terminal block



Carrier current proved to be a ver satile servant for the utilities. This view of a southern California carrier current set used instead of a pilot-wire for relaying on the high voltage transmission system is only one of many new applications developed during the year

Among the various schemes recently utilized in the growing application of reclosing breakers to promote continuity of service a new "one-shot" automatic resetting, immediately-reclosing relay is of interest because of the ingenious but simple principle upon which it operates. This device consists of a relay with a self-contained capacitor, the latter being charged from a direct current through a high resistance when the breaker is closed. The time required to accumulate this charge determines the resetting time on the relay. When the circuit breaker trips (after having remained closed for the resetting time), an auxiliary switch connects the relay-operating coil across the capacitor, discharging the latter through the coil to operate the relay. If the breaker remains closed, the capacitor will recharge but, if the fault has not cleared within a few seconds and the breaker trips open again, the capacitor will not have been recharged sufficiently for another operating cycle and the relay automatically locks out until the fault has cleared and the circuit has been closed manually.



Esterline -Angus Co.

A new kva. recording meter used in conjunction with a phase-shifting network permits reading over a range of power factors from .54 to .94, with a very small error

Probably the most ingenious application of automatic reclosing principles is that developed by the I-T-E Circuit Breaker Co. for use on air circuit breakers. Unusual is the fact that no external electrical circuits are involved in the reclosing principle. The breaker is self-actuating in its reclosing cycle, which takes advantage of the world's most reliable force, namely, gravity. The recloser operates on the well-known principle of the hour glass and has but two moving parts, a measured volume of mercury and a cylindrical case containing it, the latter being mounted on the breaker itself. The cylindrical case is provided with three enclosing chambers suitably arranged for predetermining the flow of the mercury and controlling that flow. The case is axially mounted on trunnion bearings supported on the circuit breaker panel which permit it to be tilted forward and backward through a 90-deg. angle by the respective opening and closing movements of the circuit breaker. The resulting positions of the case determine the flow of mercury through calibrated orifices from one chamber to another. With the circuit breaker closed the mercury is all in the lower portion of the main chamber.

Upon opening of the circuit breaker due to short circuit or overload, the cylinder is rotated 90 deg. which allows the mercury to flow through a calibrated orifice into another chamber where two contacts are placed so that

contact is made between them when the mercury reaches a certain level. This contact initiates the first reclosure of the breaker. Upon reclosure the mercury is thrown into a third chamber from which it drains through a calibrated orifice into the original chamber. If the breaker remains closed, all of the mercury eventually returns to the main chamber but if it reopens again within a short time, indicating that the fault or overload has not been removed from the circuit, the breaker opens again repeating the cycle. Should it open again, the mercury trapped in the third chamber will not be of sufficient amount to re-fill the second chamber to the point where the mercury will form a connection between the two contacts when the breaker remains locked out.

INDUSTRIAL—*Electronic applications for control increasing — Speed reducers gain in popularity — Welding simplified with new designs — Protective equipment improved — Efficiency and greater production factors in design of new industrial drives*

GENERALLY speaking the most significant trend in electrical industrial development during 1935 was the growing use of electronic and photronic devices for the automatic control of processes and equipment. Tube applications passed beyond the experimental stage and are becoming increasingly common as the complexity of industrial requirements grows. Electron tubes themselves were subjected to much development which adapts them more readily to operating processes. The outstanding advance in this respect was the introduction of the steel envelope or all-metal tube in both the radio and industrial fields. In the latter, the elimination of the fragile glass envelope marks the introduction of the electron tube as a rugged, heavy-duty device suitable for wide industrial application.

The ability to obtain direct current in quantities sufficient for power applications through the use of tubes together with the wide-range flexibility of control possible, the relatively low weight, the low cost maintenance, and the compactness of such installations may result in a reversal of the trend toward the use of alternating current on many machines. In many processes it has been adapted because of the inconvenience or lack of facilities for the economical generation of direct current, even though the latter might have been superior for the particular application. Conversely electron tubes have been adapted to make alternating current applications equal to or superior to the characteristics obtainable from direct current equipment. Although not commercially available yet, General Electric has constructed a 400-hp. Thyratron motor which utilizes a group of electronic tubes to perform a function similar to that of the commutator of a direct current motor. The motor operates under a smooth variable speed cycle which is closely controlled and is supplied from a three-phase power system. The principles involve the use of a phase-shifter operating in the grid circuits of Thyratron tubes which are connected directly in the various stator circuits.

To describe in detail all of the applications in which electronic tubes have invaded the field of conventional apparatus would be too voluminous. They have supplanted the reactor for dimming theater circuits, their lack of inertia has made them ideal for quick response voltage regulation; their ability to control cycles of operation lasting but fractions of a second facilitates for automatic welding control; because they can provide oscillating currents of practically any frequency they provide a method for timing certain types of processes and for regulating the speed of small converters and other direct or alternating current equipment such as that used in synchronized motion picture developing, telescope control and other uses.

When the various types of rectifiers are considered, the small static copper oxide type found wide application during the past year for control circuits and other places where relatively small amounts of d.c. were needed. Inexpensive, inherently long-lived and requiring practically no maintenance, the utility of this device gives it a high value.

An important contribution to the control of large synchronous motors was made by Westinghouse in its angle switching equipment which employs electronic tubes to prevent the compression strokes on synchronous motor-driven reciprocating pumps and compressors from occurring in unison. This reduces the magnitude of current pulsations where two or more drives are used, reducing light flicker and interference with the operation of other electrical equipment.

Paralleling the trend toward the use of individual motor drives is the growing use of speed reducers to obtain low shaft speeds. Speed reducers employing high-speed motors directly connected to a gear reduction unit are being substituted for the larger and more bulky slow-speed motors which inherently operate at or near the desired shaft speed. Mechanical methods for obtaining varying speed from squirrel cage induction motors also have been

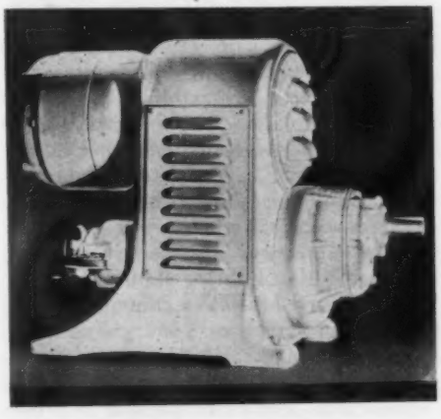
Westinghouse Electric & Manufacturing Co.

Electronic spot-welding control limits the welding current application to a few cycles, thereby eliminating distortion and burning on light metal welding—one of the many industrial applications to which electronic tubes are being applied

placed on the market by a number of manufacturers. A new development in this connection which was recently placed on the market by the Allis-Chalmers Co. is known as the Vari-Pitch Texrope sheave. By means of a simple adjustment which takes but a few moments the pitch diameter of this new sheave can be changed so as to give variations in speed as high as 15 per cent per sheave. It is adaptable for V-belt drives which formerly employed several sets of sheaves to meet the requirements of occasional changes in speeds.

In the field of large industrial drives for shovels, dredges and similar equipment an outstanding unit because of its size, is an electric shovel used in open pit coal mining which has a 32 cu. yd. capacity and requires approximately 3,500 hp. for its operation.

The variable voltage drive, such as that used on the Natomis Gold Dredge No. 1, typifies the trend toward the use of variable voltage direct current in place of alternating current to provide flexibility of control and operation and to coordinate power requirements to



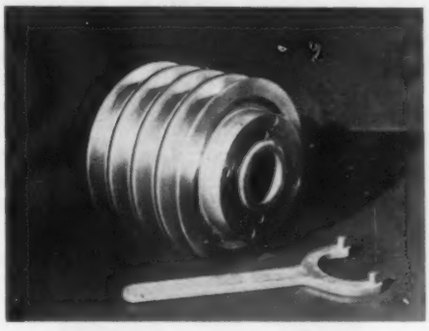
U. S. Electrical Manufacturing Co.

Reduction gears and mechanical speed changers expand the field of application for squirrel cage induction motors. Here is a new upright design which saves space laterally and permits the take-off shaft to be either in the high or low position

produce maximum efficiency, greater production and a means of taking advantage of power factor bonuses. This particular dredge produces 35 per cent more yards per hour than other comparable units and at a reduction of 15 per cent in the kilowatt-hours per cu. yd. of material moved.

Nineteen thirty-five also witnessed the installation of the first Kraemer drive for dredge operation. This drive provides a constant torque under accurate control and converts the slip energy of the main motor into energy that is pumped back into the lines, thereby improving the efficiency of the unit. This dredge is now in operation on the Ft. Peck project in Montana.

Air conditioning made great strides in the industrial and commercial fields during 1935. In its various phases it has been adapted to give a better product in various types of industrial processes and it has expanded its field of application to include practically every public store, shop or building where comfort of customers pays dividends in a greater volume of business. Numerous manufacturers entered the field with the unit type of air conditioner for



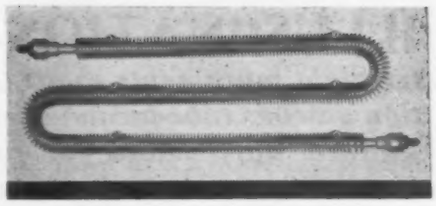
Allis-Chalmers Co.

Another method of speed variation is provided in this vari-pitch Tex-rope sheave whose pitch diameter can be changed to give variations as high as 25 per cent in belt speed

smaller shops or individual rooms. The central air conditioning plant is now recognized as an integral part of all buildings and even in older buildings, the expense of installing such a system has proven a profitable investment.

Electric welding commanded and received a greater share of the work of fabrication and construction. Automatic welding, with the accurate control possible with electronic tubes, practically has made obsolete other methods of fabrication of steel tanks, tubes, pipes, sheet metal work and other processes of a similar type. Hand welding sets not only became more portable but improved their operating characteristics by radical departures from conventional design. Westinghouse simplified its welding generator by substituting adjustable iron shunts around the rotor for the usual shunt coils, the total nummer of field coils being reduced from eight or ten to four. The adjustable shunts act upon the reaction flux of the machine and their position with respect to the main flux determines the welding current which produces an extremely stable arc and adjusts itself automatically to varying conditions which in turn gives strong, uniform welds on the various thicknesses of metal.

In its new design of a welder, General Electric provides an inherently high reactance and a provision for varying the reactance by means of a movable magnetic shunt in the leakage



General Electric Co.

Fins brazed to the conventional steel sheathed heating unit give increased heating service and better heat distribution, another development of 1935

path. The technique of welding with alternating current has been improved with the use of a new transformer providing a current adjustment which permits changes in the welding current while the arc is being maintained. Welding currents as low as 20 amp. are practical, expanding the field of application of commercially welding thin metal sheets.

The superiority of electrical heat in industrial processes in producing a better product with fewer rejections has led to a greater adoption of electrcity for heating purposes even though it may not be competitive in price with other fuels. However, promotional rates for heating applications have been instituted by many utilities and have no doubt stimulated the trend. In this connection dump power rates have been established in certain localities for single-phase metal reduction furnaces where the capacities are such that this type of load will not materially affect the service. Aside from the normal applications of baking, drying, annealing, and hardening, electric furnaces now have been developed for copper brazing of steel parts.

Improved heat radiation and longer life for units in various types of air heaters is claimed for the improved sealed Calrod heating elements with the addition of steel fins copper brazed to the sheath as shown in the accompanying illustration.

Industry is adopting the fuseless circuit breaker which incorporates thermal protection, thus eliminating fuse replacements and making switchboard installations more compact

Colt's Patent Firearms Co.

ILLUMINATION— *Better Light–Better Sight movements showing results—Combination gaseous tube-incandescent units record gains —Rural applications for forcing plant growth, irradiating food products and insect control features of 1935's progress in lighting*

THE most significant trend in illumination during 1935 was the clearly discernible effect of educational measures taken by the industry to inform the general public about the advantages of improved lighting. These educational measures together with the new equipment that was developed both for the lighting installation and the simple means of lighting measurement constitute one of the most humanitarian and profitable activities undertaken by the industry. Also significant are the cooperative activities established between widely divergent groups such as the plant engineer, the optometrist, paint manufacturers, etc. whose common interest is better light and vision conservation stimulated this group action in educational and promotional efforts.

In the field of incandescent lighting, there have been no spectacular developments but the Lumiline lamp is now being widely used for decorative purposes. A smaller edition of the "three-light lamp" having filaments of 100 and 50 watts respectively is now available.

In gaseous conductor lamps, the sodium vapor units and the high intensity mercury lamps have passed through the experimental period and are enjoying a more widespread use in applications suitable to their spectral characteristics. Combinations of mercury-vapor gaseous tubes and incandescent lamps are particularly important for industrial applications involving accurate color differentiations or manufacturing operations which involve difficult visual problems. A new commercial unit of this type manufactured by the General Electric Vapor Lamp Co. practically duplicates the color balance of the afternoon sun in its proportion of the primary colors. An important development in the field of illumination which gives much promise is the use of light traps for insect control in agricultural regions. Both gaseous and incandescent lamps by various colors have been used successfully to attract insects into a charged screen trap. The largest project in the commercial application of this principle is an Indiana orchard of 5½ acres in which a light trap was placed in every tree.

G. E. Vapor Lamp Co.
A new combination lighting unit consisting of a circular mercury vapor tube and an incandescent lamp duplicates sun light for exacting visual requirements in factories and stores

Wuelker Lamp Co.
A new swivel mounting permits light to be directed in any desired spot such as under grease racks, assembly lines or in machine interiors

Agricultural science is responsible for two other important lighting developments. The first of these is the study which is being made on the effect of plant growth under controlled lighting. Incandescent lamps, gaseous vapor lamps and combinations giving a variety of spectra have been used with excellent results which indicate a growing application of this form of illumination. Greenhouses experimentally heated with incandescent lamps which provide, in addition to the heat, extra growing hours under light also have been very successful and in some cases have cut the time necessary to develop new varieties of plants in half.

General Electric NELA Park
A visibility meter, one of the helpful tools provided for the lighting specialist and lighting engineer

The second important development is that of ultra-violet radiation in animal and poultry husbandry. Special types of sunlamps have been designed to irradiate the bags and udders of cows. Eggs exposed to ultra-violet radiation increased productivity and chickens hatched therefrom appear to be stronger and healthier than those incubatored under normal conditions. Egg production also has been improved by exposing the hens to ultra-violet light.

Another development which cannot be ignored in this review of the progress of illumination is the use of ultra-violet light in connection with fluorescent paints to achieve spectacular decorative effects for public places such as cafes or clubs. The first installation of this type was made in a popular night club of San Francisco, the significant points here being that a complete supplementary scheme of mercury vapor lamps was installed in addition to the regular lighting fixtures.

But a few of 1935's contributions to the advancement of electrical science, application and utilization could be included here. Thousands of other less spectacular and more prosaic improvements made them possible. Underlying the appreciable progress that was made during the year is the vast army of scientists and engineers whose objective is the improvement of processes and equipment. This impetus supplies the driving force which accounts for the tremendous growth of electrical application. Nor is there any indication of cessation in this growth; rather to the contrary.

New problems are presented to the industry. They are solved and in so doing, perhaps develop a new theory or application that opens up entirely new fields for electrical exploitation. More problems come up to repeat this cycle of progress. As long as the electrical industry admits that there still remain problems for the utilization of its products and services, and as long as the industry is willing to undertake the solution of those problems, there will be many more years of achievement and progress such as 1935.

Bill Jones Speaks + + +

For a New Contributor

I GUESS you know, folks, that some folks get all they learn out of the newspapers, others seem to scratch their answers in the sand, a few look into one of them crystal balls, and a lot of others read what is to be in the stars. Well, up here in the old lookout at Squirrel Hollow, nature, with the aid of man has plastered over the whole hillside signs as to just what we poor folks may expect in this so-called year of our Lord 1936.

Getting so now that even the old Farmers' Almanac is behind the times. Caleb Winkle, down on the old South Road, fooled himself last year by planting potatoes when the almanac said "Plant." He plumb forgot that his copy was the Southern Edition, for the very next day we had a 13 inch blizzard and Caleb came down with the jumping pneumonia.

Of course I can see right now that things are going to be different this coming year. A feller from one of them electric outfits down in the city came up here a while ago and, after telling me what he could do if he had this place, I let him string a lot of wires all over the farm. Sort of figured that if he could do what he said—and he'd never been up here before, either—why, scratch my back, I could do the same or even better. So I told him to go ahead. First thing he did was ask me how many cows I had. Told him eight. Then said if I wanted to get 'em milked all I had to do was push a button. But he will have a hard time of it when he tackles Marietta. Anyway said to push another button and the windmill would start right up and water the whole bunch of stock. In fact, he had it figured out that with ten of them buttons, scratch my back, if we couldn't do the work on the whole darn farm by just ma and me sitting on the front piazza, pushing buttons once in a while and reading the Farmers' Gazette in between. He even had a button to operate the garden, said you could have strawberries for Easter Sunday and green peas and new potatoes by Decoration Day and the only thing to do was just put a few wires underground. That interested ma 'cause she prides herself on the garden.

Had another device, that's what he called it, that he wanted to put in the chicken-house. Said it was an ELECTRI-CAL nest warmer. When the hens got in to lay, everything was so comfortable they usually stayed in all day, saving a lot of feed. Said that once in a while a hen layed two eggs just to show her gratitude and appreciation. He wanted to hook up a clock right in the chicken-house (didn't say or not if they could tell time) that would wake 'em up and get 'em down on a warm floor by six in the morning in the Winter time and make 'em go right to work. Told also about a contraption for plowing. I had him install that. It seems he called it a RE-MOTE CON-TROL—something like that anyway. Said all I had to do was to sit up in a tree, get my eye on the tractor, push a button that he would rig up and darned if it would start right down the furrow all by itself. If I wanted a left hand turn at the end just give a dial a left hand twist.

One of the best things he had was what he called his "COMPLETE PIG PEN INSTALLATION". Asked me if I had ever heard about two blades of grass growing where one grew before. Told him no but even us dumb farmers up here in the Hollow knew something about two pounds of pork growing in the place of the one the Government paid us for not growing. Thought that was kinda queer—in fact did myself, but anyway, this pig pen installation worked something like this: push one button (be sitting on the porch when you do it) and ground feed would come out of a bin and right into the feeding trough; push button No. 2 and out would pour skim milk. Then the whole business was mixed and heated by an ELECTRIC wheel at one end of the trough. Of course I asked him right away what would keep the pigs from jumping into the trough when the feed first came out, but he said that he would install an electric back-scratcher and the pigs would be so busy enjoying themselves that they wouldn't notice at first just what was going on.

Well, scratch my own back, if I didn't up and order 40 of them buttons. Sort of figured it out that from now on, ma and me is going to have it easier. The way the whole thing looks, we can make more money and do it a lot easier by just sitting on the front porch and let them ELECTRICAL WORKMEN (that's what the fellow called them) run the place and we just boss the whole darn job by pushing a few buttons.

And so Squirrel Hollow has a right to celebrate this year. In fact the NEW ERA has just about arrived, nature has been shoved clear into the background and from now its Buttons for ma and me. Reminds me that when I was a young feller myself we played a game with buttons but it was never anything like this. Seems to me some poet said their hain't nothing new under the sun but they sure are installing a lot of new rules for some of those old games. Anyhow, I'll see you next month and tell you all about the way the thing works out.—*Squire Phineas Brierwood.*

Editor's Note

Bill Jones is ill. So he sent in place of his usual contribution the following letter and the accompanying article. The Squire, he says, will contribute regularly to the Rural Electrification department.

Squirrel Hollow,
Oakdale County,
Jan. 4, 1935.

Electric Co.
City, Calif.
Dr. Sir.

I kinda thought you all would be interested in hearing about how I was getting along with the electric button installation.

Am sending along my reports number one and tw. and so that all may know about the great improvements in rural life, beg to suggest that you send 'em on to the paper that tells about new things invented for us farmers.

We are making and saving more money than we ever did before. We have given up our trip to Yourope as we're having more fun right up here at the Hollow. Just as soon as the roads get cleared come up as I want you to tell some of my neighbors what they ought to do.

The NEW ERA is certainly here and Electricity done it.

Rsfly yrs,
(Signed) SQ. PH. BRIERWOOD.

Ranges, Water Heaters, Refrigerators

Company Name	Ranges Sales 1935	Ranges Quota 1936	Water Heaters Sales 1935	Water Heaters Quota 1936	Refrigerators Sales 1935	Refrigerators Quota 1936
Alameda, City of	171	300	30	...	386	...
B. C. Elec. Ry., Vancouver	656	650	214	285	581	700
Burbank, City of	75	100	19	30	485	500
California Oregon P. Co. / Mountain States P. Co.	3,060	4,000	706	1,500	3,975	3,000
Central Arizona L. & P. Co.	162	194	25	94	2,991	2,450
Idaho Power Co.	2,731	2,658	1,319	1,330	5,719	6,389
Los Angeles, City of	1,226	2,500	280	1,000	10,000	...
Montana Power Co.	545	640	22	61	1,554	1,753
Northwestern Elect. Co.	1,223	875	185	275	2,960	2,680
P. G. and E. Co.	3,213	3,221	2,439	2,198	38,754	...
Pacific P. & L. Co.	1,543	1,320	1,008	945	4,333	3,825
Portland G. E. Co.	2,872	3,000	1,034	1,500	8,900	9,600
Pub. Serv. Co. of Colo.	350	608	14	50	1,834	2,140
Puget Sd. P. & L. Co.	5,094	5,500	2,715	3,000	8,146	2,500
San Diego Cons. G. & E. Co.	375	300	591	300	6,850	7,000
San Joaquin L. & P. Corp.	1,481	1,750	738	850	7,807	7,500
Seattle, City of	2,120	3,000	890	1,500	260	500
Sierra Pacific P. Co.	686	500	153	125	857	500
So. Cal. Edison Co. Ltd.	5,385	7,500	2,628	4,000	34,855	30,000
So. Colo. P. Co.	423	324	75	200	1,216	400
So. Sierras P. Co.	552	385	493	400	387	300
Tacoma, City of	576	700	399	600	...	...
Utah P. & L. Co.	1,977	2,200	446	750	7,545	8,160
Wash. Water P. Co.	1,278	700	1,242	1,182	8,695	10,000
Western Colo. P. Co.	...	...	...	...	...	...

See the accompanying reports for interpretation and explanation of these figures.

Sold Ranges on New "Pay Like Rent" Plan

By **W. C. MAINWARING**
Merchandise Manager, B. C. Electric Railway Co., Ltd., Vancouver

TOTAL electric merchandise sales increased in dollar volume over the 1934 total by 18.5 per cent. Commencing March 1, 1935, we inaugurated a "Pay Like Rent Plan" on electric ranges, whereby these were sold on terms of $2.00 a month, where wiring for the range was necessary, and on terms of $1.50 per month where the house was already wired for an electric range.

Customers who purchased other than the Long Term Plan range were offered a $25.00 rebate where wiring for the range had to be installed, this rebate being given to them after the electric range has been in service for twenty-four months.

Total range sales by the company were 606, of which 438 were sold on the Pay Like Rent Plan.

Storage water heaters were sold on the "Rental Purchase Plan." With this plan the customer may have a heater installed and pay a monthly rental which is applied toward the total purchase price of the heater. At the end of the first twelve months, the contract may be discontinued at the customer's option, in which event such rentals paid are kept by the company.

The energy for these heaters is on an off-peak rate of 8/10c per kw.-hr. 151 electric storage water heaters were installed in 1935.

Continued progress is being made in promoting the sale of electric refrigerators in this territory, both by ourselves and by all other dealers who display this appliance.

Mazda lamp campaigns were conducted during the spring and fall months, using our employees at large to do the selling. A volume of $20,000 was reached in these two campaigns.

Sales of portable lamps of all types have shown a tremendous increase. During the year we have specialized in the promotion and sale of indirect portable units, particularly the floor model, using the 2 filament -100-200-300-watt globe. This has resulted in the sale of over 1,500 floor type, indirect lamps and 250 of the table type, study lamps.

The sale of electric ironing machines has shown an increase of over 60 per cent above 1934 sales and we feel that this appliance will again show a very large increase in 1936.

Throughout the year there has been a steady increase in the sale of quality table appliance merchandise.

(Mainland only)

Electric ranges	
Number sold by company in 1935	606
Approximate number sold by dealers, 1935	50
	656
Quota for 1936—company	600
Other dealers	50
	650
Electric water heaters	
Storage water heaters sold by company, 1935	151
Sold by dealers in 1935	None
	151
Flat rate immersion water heaters sold by company in 1935	53
dealers in 1935	10
	63
Quota for 1936	
Storage water heater sales by company	250
Other dealers	None
	250
Immersion water heaters by company	30
Other dealers	5
	35
Electric refrigerators	
Number sold by company in 1935	281
Approximate number sold dealers	300
	581
Quota for 1936—company	350
Other dealers	350
	700

Plans for 1936 call for sales cam-

Every Figure

There is Significance to Everyone in These Accounts of Last Year's

ITS meaning explained, every figure in these pages is significant. Without such explanation, statistics may appear formidable. Yet the figures given in the following pages have a definite meaning to electrical dealers, contractors, wholesalers and distributors, manufacturers, the utilities, yes, and even to the employees of all of these branches, even though their work may not be directly connected with sales. A few words showing how best to derive the value from these figures may assist in their effective use.

Dealers—can better plan their operations as retailers by knowing their markets. The figures give a picture of what was done last year in their territory and what the objectives are for this year. Against these the dealer can measure his own activity with greater intelligence. He can better organize his own selling to take advantage of the utilities' programs in order to bring himself more sales. He can plan his stock orders and deliveries, arrange to obtain dealer helps and advertising features, key his selling and salesmen to take full advantage of each campaign.

Contractors—with their codes gone will find that competition can best be met by salesmanship. The promotional work of the industry is preparing the way for new installation work. Appliance sales bring loaded wiring facili-

Pacific

PRINT IN BINDING

re Has a Meaning

yon Any Branch of the Industry in r's Achievements and This Year's Plans

ties and the need for more wiring. Phenomenal sales of I. E. S. lamps indicate a real need for better lighting equipment. Contractors knowing the sales programs contemplated can organize their efforts to get more wiring jobs.

Wholesalers and Distributors—find the figures useful as a guide to better marketing. Stock movements and supplies on hand can be planned to better advantage. Past campaigns help to determine trends and to anticipate seasonal demands. Sales forces can be prepared to contact and assist dealers at the right time to derive the most benefit from the promotional drives of the utilities and societies. All this means better volume and more profitable operations.

Manufacturers—gain from these figures a knowledge of the location of markets, trends and promotional activities. Advertising and production can be planned for special seasons or campaigns. Their own proportion of last year's sales will give an intelligent appreciation of the market expectancy for this year and help to strengthen their sales organizations in the field. Thus costly mistakes and errors in marketing can be prevented and a more profitable business developed in 1936.

There is definite value in all these figures for everyone. Carry on—

ifi orthwest

paigns for 1936 that will be of long duration, as we have found such campaigns to be much more effective than those planned for a short period of a month or six weeks.

Special activities on all of the major appliances, with the exception of radios, have been planned to commence by March 1, 1936, and as in the past, there will be a special radio campaign during the fall months.

We will continue to promote the sale of home lighting, tying in with the "Better Light—Better Sight" campaign.

Kw.-Hr. Per Residential Customer

Company Name	1935	1934	1933	1932	1931	1930
Alameda, City of	828.9	765.6	740.2	750	...	...
B. C. Elec. Ry., Vancouver	975.2	1,000	...	...	...	940
B. C. Elec. Ry., Victoria	732	753	772	740	710	740
Burbank, City of	601	533	...	...	...	...
Calif. Ore. P. Co.	1,729.9	1,618	...	1,875	1,884	1,879
Cent. Ariz. L. & P. Co.	731	708	756	745	727	665
Coast Co. G. & E. Co.	...	...	653	716	733	704
Glendale, City of	...	620	...	...	...	...
Idaho P. Co.	1,276	1,220	...	...	...	1,447
Los Angeles, City of	602	588	580	595	550	521
L. A. G. & E. Corp.	...	...	...	...	...	...
Montana P. Co.	724	705	...	739	729	695
Mt. States P. Co.	971.9	792	...	...	...	...
Northwestern E. Co.	1,177	1,200	1,210	1,294	1,259	1,195
P. G. and E. Co.	744	726	733	756	758	723
Pacific P. & L. Co.	1,287	1,236	1,231	1,341	1,310	1,184
Portland G. E. Co.	1,046	991	994	1,053	1,028	1,004
Pub. Serv. Co. of Colo.	541.7	498	...	...	450	424
Puget Sd. P. & L. Co.	1,029	993	1,021	1,095	1,115	1,107
San Diego Cons. G. & E. Co.	637	573	622	636	597	551
San Joaquin L. & P. Corp.	1,020	972	912	947	942	916
Seattle, City of	1,000	1,050	...	1,014	1,102	1,084
Sierra Pacific P. Co.	1,028	922	893.2	930	885	781
So. Cal. Edison Co. Ltd.	738	680	681	728	720	691
So. Colo. P. Co.	619.4	580	...	...	595	561
So. Sierras P. Co.	965	915	930	940	910	807
Tacoma, City of	1,563	1,554	1,566	1,758	1,796	1,824
Utah P. & L. Co.	766	716	705	...	772	725
Vallejo E. L. & P. Co.	...	789	...	...	747	609
Wash. Water P. Co.	1,664	1,610	1,763	1,806	1,804	1,710
Western Colo. P. Co.	...	684	485	...	...	...

See accompanying reports for further comments on these figures.

Continue Extensions on Vancouver Island

By S. J. HALLS
Manager, Light & Power Dept., B.C. Electric Railway Co., Victoria

STEADY progress was made in the past year on Vancouver Island, 718 new consumers being connected to our lines. The average consumption per domestic customer for the year 1935 was 732 kw.-hr.

Our policy of making extensions in the rural districts, where anticipated revenue warranted, was continued. Our commercial customers generally increased their consumptions considerably as compared with previous years, especially during the Christmas season when electrical decorations and special Christmas lighting were made a feature.

A 60,000 kv. transmission line was completed from Bamberton (near Victoria) to the city of Duncan, adding a load of 1500 kw. which is supplied the Nanaimo-Duncan Utilities, Ltd., for distribution by them in territory in and surrounding the cities of Duncan and Nanaimo. It is expected in the near future to increase this load by 2000 kw. which will be used in opening up coal mines in that area.

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Lighting and Power in B. C. Made New Records

By EDMUND E. WALKER
Sales Engineer, B. C. Electric Railway Co., Ltd., Vancouver

CONSUMPTION figures for the month of December, 1935, are not available yet and therefore we cannot give the per customer consumption for the year 1935, but are providing the figures for the year ending June 30th, 1935. The kilowatt-hour consumption per domestic customer, for the year ending June 30th, 1935, on our Lower Mainland System, was 975.2 kw.-hr. per customer.

Residential Lighting—Our program for the year 1935, consisted of Red Seal activities, and the preparation of lighting layouts for new residences. At the beginning of the year we engaged a staff of young ladies who promote the Better Light-Better Sight propaganda in our customers' homes. These ladies have been very successful in substantially improving lighting conditions in the homes surveyed.

Our illumination department has cooperated closely with the optometrists association and they have furnished us with many valuable leads. We, in turn, provide them with information of surveys made in the homes of their clients.

Commercial Lighting—Continual demonstrations are being carried on among our commercial lighting consumers by salesmen provided with sight meters and demonstration kits. Close co-operation is maintained with the Contractor Dealers Association and plans were provided for a great number of premises. These plans involved revamping the lighting layout.

Agricultural—Our agricultural staff was increased during the year and a complete survey of all farm customers has been undertaken. The agricultural consumption per customer has shown a nice increase. Weekly radio programs,

monthly bulletins, newspaper advertisements and bulletin boards are used for agricultural publicity.

Industrial Power—Industrial power consumption showed the greatest increase of any classification during the year 1935, and is now exceeding our previous peak. No new mining customers were connected during the year, but substantial increases in our connected load for this purpose is expected during the coming twelve months. The lumber industry is experiencing a sharp revival and it has been necessary to increase the industrial power sales staff.

Briefly our program for 1936 contemplates increased activity along the lines mentioned above.

The new sequence metering is now standard throughout our Lower Mainland System and diversion of energy among existing consumers shows signs of decreasing, due to the inspection service we have maintained during the past year.

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Rural Load Building on the Increase in Northwest

By GLENN L. JACKSON

Vice President in Charge of Sales, The California Oregon Power Co., and Mountain States Power Co., Medford, Ore.

AS a general statement covering 1936 we believe that the improvement in economic conditions, together with a well-planned, selective program, based upon a complete economic analysis of our customers, plus the continual development of a more effective organization, both of company and of dealers, should make the year another record one in the sale of electrical service.

The sale of commercial lighting and heating during 1935 was particularly encouraging, with indications of even more substantial increases in 1936. Rural consumption increased approximately 19 per cent as a result of aggressive rural load building activities conducted during the past year. Increase in the use of irrigation is particularly noteworthy. So is the further adaptation of electricity in the poultry and dairying industries.

New rates for 1936, providing for the use of motors up to 7½ hp. on rural residential combination rates, provide an opportunity for large increases in motor use for the coming year. Substantial increases were shown in industrial uses for both systems during 1935.

Likewise substantial increases in the sale of commercial lighting and heating were developed. An index of the improvements in these classifications is to be found in the increased kilowatt-hour sales per commercial customer of the California Oregon Power Co. for the year ending Nov. 30, 1935. This figure was 136 kw.-hr. The increase for the same period for the Mountain States Power Co. was 292 kw.-hr.

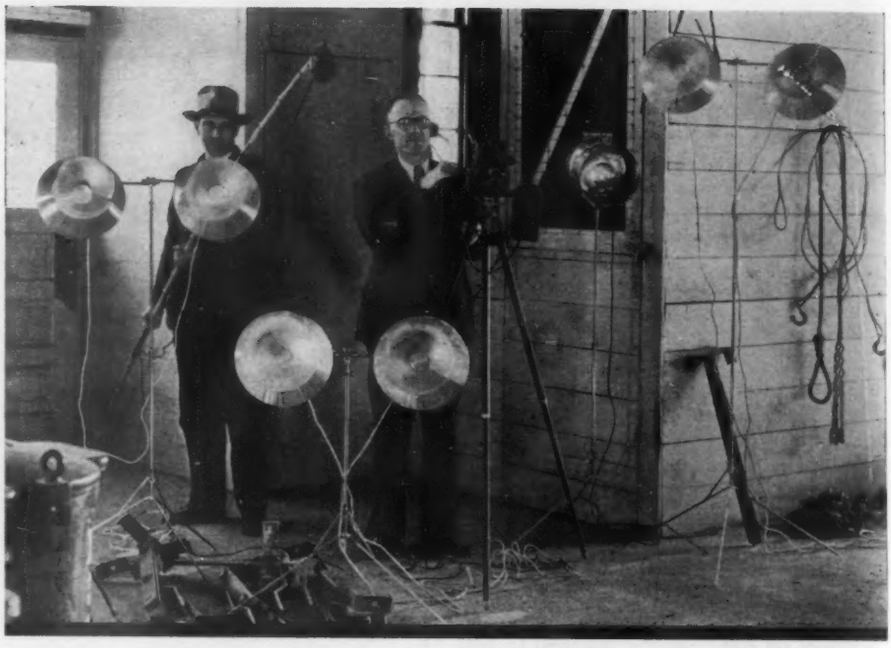
Domestic load increase is likewise indicated by the improvements in the average domestic consumption figures for both companies. The Mountain States Power Co. average consumption per domestic customer was 971.93 kw.-hr., an increase of 83.51 kw.-hr. over 1934. For the California Oregon Power Co. the average was 1,729.98 kw.-hr., an increase of 58.61 kw.-hr.

The number of ranges sold on both systems by the two companies during 1935 totalled 3,060. Dealer sales figures are not compiled. Our quota for 1936 is 4,000 ranges. In this connection it is well to add that 10,000 of our customers are in territories where costs of service are high and hence have no rates conducive to the use of electric ranges. Furthermore there is natural gas competition at prices ranging from 29 to 50 cents per 1,000 cu.ft. for 1,000 B.t.u. gas.

Water heaters sold on the system during 1935 by the company totalled 706. Our quota for 1936 is 1,500. Up to this time we have not had a promotional water heater rate. In fact in a large part of our territory we have no water heater rates of any kind.

The number of refrigerators sold by the company alone on the system during 1935 was 1,975; by the dealers we estimate 2,000. The quota for 1936 is for 3,000 refrigerators.

The program carried out in 1935 was part of a three-year program. This will be continued aggressively throughout the year 1936, with increased quotas in the sale of load building appliances, commercial lighting, rural development and power uses.



Movies of actual farm installations at work, taken by the company's own men, have been a big aid in developing farm electrication for Copco

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Constructed Rural Lines and Added Customers

By L. W. BRAINARD

Sales Manager, Idaho Power Co., Boise

PLEASING increases were accomplished during 1935 in all classes of electrical service sales including residential, commercial, and industrial. Major factors in these accomplishments were felt to be the extensive remodeling and new building in both residential and commercial fields. Results of co-operative activity in development of lighting also was a factor in increases in both residential and commercial sales.

Rural electrification activity during 1935 resulted in construction of 272 miles of rural distribution line and connection of 1,060 customers thereto. In addition to these customers connected to new line extensions, 736 customers were connected to existing rural lines, bringing the total to 1,796.

Kilowatt hour sales per domestic customer for twelve months of 1935 were 1,276. This is an increase of 56 kw.-hr. per customer.

	Range sales 1935	*Range quota 1936*
Dealer	1,247	1,258
Company	1,484	1,400
Total	2,731	2,658

Net increase in number of cooking customers, Dec. 31, 1935, as compared

with Dec. 31, 1934, was 1,647, bringing the total cooking customers to 17,546. Cooking saturation as of Dec. 31, 1935 was 44.7 per cent.

Water heaters sold during 1935 totalled 1,319. The quota for 1936 is set at 1,330.

Net increase in number of water heating customers, Dec. 31, 1935 as compared with Dec. 31, 1934, was 759, bringing the total number of water heat customers to 5,551. Water heating saturation as of Dec. 31, 1935 was 14.1 per cent.

Increase in per cent of both cooking and water heating saturation which for the past few years have been among the highest in the nation have been affected by the increase of 2,725 residential and farm customers on the new lines mentioned above.

	Refrigerator Sales—1935	*Refrigerator Sales—1936*
Dealer	5,053	5,679
Company	666	710
Total	5,719	6,389

Our 1936 program contemplates the expansion of the Home Service Department, continuation of dealer cooperative activities through the Electrical Equipment Sales Assn. and increased attention given to sales training. As a result of these factors and complete coverage of all markets and uses for electrical service, it is contemplated that the 1936 quotas for company and dealers will be accomplished. The residential kilowatt-hour quota has been set at 1,375 kw.-hr. per customer.

The Electrical Equipment Sales Assn. is the cooperative dealer and power company organization in southern Idaho, with headquarters in Boise. Regular monthly dealer reports compiled by this association show an increase of 47 per cent in electrical merchandise sales volume in this territory in 1935 over the previous year. This represented a total retail value of $2,373,366 for the year. Noteworthy increases in individual items were: refrigerators, 111 per cent; stokers, 65 per cent; floor and table lamps, 44 per cent; ranges, 41 per cent.

Some individual unit sales not shown in the above tables were: Ranges, 2,731; radios, 4,985; washers, 4,770; and I.E.S., Renu-a-lite, Pin-it-up and other types of lamps, 11,324. Twelve small appliances listed sold in the aggregate number of 17,506 units.

Farm equipment bulked large in the total volume with 235 pressure water systems, 749 motors, 452 yard lights as the leaders.

One of the many spreads of cooperative ads by dealers and the E. E. S. A. is reproduced below. The cooperative group accounted for unusually large sales volumes last year

Increased Lighting in All Classifications

By J. C. PLANKINTON

Manager, Sales Bureau, Northwestern Electric Co., Portland

As reported last year, our company in its sales work devotes itself almost exclusively to the development of business for cooperating dealers and only sells merchandise on call or in districts not adequately served by dealers. Dealers sold a fine volume of appliances in our territory, however, as the figures will show. The number of electric ranges sold on our system in 1935 was 1,223, of which the company sold but 80, and the dealers 1,143. In 1936 we have set quotas of 145 ranges for the company and 730 for dealers, a total of 875.

Water heaters sold by the company in 1935 totalled 80; by dealers 105, a total of 185. In 1936 we expect to sell about 165, and that dealers will sell 110, a total of 275. The company sold only 32 refrigerators in 1935 but dealers sold 2,928, a total of 2,960. We expect to sell about 40 this year and dealers will sell more than 2,640, a total of 2,680.

Kilowatt-hour consumption average per domestic consumer as of Dec. 31, 1935, was 1,177.

In commercial lighting we have had five full time men in Portland and four part time men in our outside district. During the past twelve months' period we sold approximately 1,666 kw. of additional lighting load.

In industrial lighting we have had six part time men calling upon our industrial customers and they have been responsible for 114 kw. of additional load during 1935.

In the domestic field we have had nine home lighting girls working from Jan. 1 to May 1, six girls from May 1 to Sept. 1, and nine girls from Sept. 1 to Dec. 31. During this time a total of 810 kw. of additional load was sold to our domestic customers.

Supplementing our personal sales effort, we have used extensive newspaper advertising on commercial, industrial and residential lighting, and have mailed a total of 484,800 pieces of direct mail literature in these three fields, as follows: residential 430,000, commercial—lighting 42,000, heating 2,400, refrig. & air cond. 2,000; total 46,400. Industrial — lighting 2,400, power 1,200, heating 4,800; total 8,400.

Industrial power sales have been handled by two full-time men and four part-time men. The total sales for 1935 were 1,090 kw. in industrial power.

Our plans for 1936 are very much in line with those of 1935. Our quotas for commercial, industrial and domestic lighting are, in almost every case, equal to those for 1935.

Will Stress Additional Uses by Customers

By GUY E. DAVIS

Merchandise Manager, Pacific Power & Light Co., Portland

Overall quotas for 1936 will be considerably higher than for 1935. While we are well pleased with results obtained during the past year we feel that we should do a much better job in 1936. We are strengthening our forces along certain lines in order that we may take advantage of every opportunity to increase our revenues from all phases of the business. While every effort will be put forth to secure new outlets we expect to stress the advan-

tages of additional uses by present customers. In so doing we not only give the customer a more worth while service and a greater value for money expended but improve our earnings from present investments.

We will endeavor to broaden the field for the electric equipment dealer through combined efforts of newspaper advertising, public demonstrations, periodicals, direct-by-mail pieces and with all company employes telling the public of our complete electric service.

All company sales and promotional representatives will be equipped to do "all service" selling. In other words, while contacting the customer a complete story will be told relative to the various services we have to offer. Obviously such a plan of action, followed consistently, will create a demand for all kinds and makes of electric equipment which in turn will mean increased business for the dealers.

The company will, insofar as practicable, confine its efforts to the promotion of commercial, industrial and farm services, leaving the sale of equipment to the various dealers.

We will aggressively promote and sell directly all standard domestic electric appliances with the exception of radios. Sales campaigns will be so arranged as to tie-in closely with domestic equipment dealers, our aim being to secure the maximum amount of business through the combined efforts of dealer and company sales force.

In all company activities we will be governed by good sound business principles, thus enabling the dealers to participate on a profitable basis. Dealers will be invited to offer suggestions or criticisms relative to plans which are being followed.

In order to insure a maximum of results from all phases of our activities we have sub-divided the program. The accompanying tables show both results of last year's operations and this year's program.

For the infinite detail of drawing the U. S. Engineers office in Portland was fitted with good lighting equipment that produces 45 ft. candles on the working plane. Eight by ten foot spacing for indirect units equipped with 300 and 500 watt lamps gives this result

Neighborhood Theaters to Stage Household Shows

By A. C. McMICKEN
General Sales Manager, Portland
General Electric Co., Portland

OUR 1936 load building program will be primarily to increase the use of energy among domestic customers; to further our commercial and residential lighting activities; and to get more heavily behind commercial cooking and heating and agricultural electric service. All of our 1936 domestic load building activities will be on a cooperative basis with all retail outlets, and approximately 66 per cent of our advertising and promotional expenditures will be to assist dealers in merchandising all manner of electrical appliances, from lamp socket devices to electric ranges.

We have arranged for a series of programs in neighborhood theatres which we believe will be beneficial to all branches of the industry, as these will be special afternoon performances when the theatres are normally closed, and will be attended by the housewives of the neighborhood who are interested in kitchen modernizing and the use of all electrical, labor saving appliances. These shows will be conducted as much, if not more, for the benefit of cooperating dealers as they are for the company.

The year 1935 was a very good one in all branches of commercial activity with the exception that there was little or no new industrial load of any kind added. Our own domestic appliance sales were 48.8 per cent greater in 1935 than in 1934. We had a very successful I. E. S. lamp activity last fall which resulted in more than 8,000 study and floor model I. E. S. lamps being sold in our territory. Progress has been made in both commercial and domestic lighting and there has been a marked improvement in the sale of kilowatt hours to all classes of customers. There has not been, as above noted, any material increase in the number of industrial or commercial power accounts. Our kilowatt hour sales for the year were 8.44 per cent better than for the year 1934.

During 1935 the company sold 1,434 electric ranges and the dealers sold 1,438 on our lines, a total of 2,872. In addition, because of free wiring, we connected 778 customer-owned ranges which apparently had gone out of service during the years of "depression". Most of these customers had moved from wired homes into less expensive, unwired ones.

Probably in order to get a complete picture for this territory in which we have competition by the Northwestern Electric Co., it might be well to mention that approximately 1,073 ranges were connected to the lines of the Northwestern Electric Co. Our quota for 1936 on our own lines is 3,000 ranges, of which the company expects to sell 1,200 and dealers 1,800.

ESTIMATED ANNUAL REVENUE

	Quota, 1936	Quota, 1935	12 mo., 1935	Per cent 1935 quota
Domestic Appliances	$278,135	$194,971	$339,441	174.1
Domestic Lighting	24,750	31,500	17,541	55.6
Domestic Appliance Restoration, Reconnect and New Customers	21,200	20,400	62,079	304.3
Commercial Lighting	36,000	27,000	32,952	122.0
Commercial Appliances	50,050	29,600	50,415	170.3
Commercial Appliance Restoration, Reconnect and New Customers	14,500	7,500	13,241	176.5
Farm Equipment Sales	20,597	19,948	23,406	117.3
New Farm Customers	7,560	.....	.....	....
Industrial Sales	95,500	67,800	137,838	203.2
Total	$548,292	$398,719	$676,913	169.7

ALL MAJOR APPLIANCES

	1936 quotas			1935 sales			Year's quota	Per cent year's
	Company	Dealer	Total	Company	Dealer	Total	Co. & dealer	quota
Ranges	810	510	1320	1058	485	1543	836	184.5
Water Heaters	720	225	945	821	187	1008	720	140.0
Refrigerators	585	3240	3825	618	3715	4333	2415	179.4
Washers	760	2960	3720	1054	4287	5341	3747	142.5
Ironers	320	240	560	366	315	681	685	99.7
Vacuum Cleaners	110	700	810	171	1046	1217	753	161.6
Domestic Water Systems	...	...		117	249	366	250	146.4
Radios	...	4550	4550	...	6556	6556	3517	185.8

During 1935 we sold 1,034 storage type automatic electric water heaters on meter rates. There were no dealer sales during this period as this is not yet dealer merchandise. We estimate that we will sell 1,500 of these water heaters during 1936.

As nearly as we can arrive at the correct figures, there were approximately 8,900 electric refrigerators sold in this territory, of which our company sold 332. It is impossible to break down the dealer sales between Northwestern Electric Co. lines and our own, therefore, the figure of 8,900 is for the entire territory served. We anticipate that the sale of refrigerators by dealers for 1936 will be approximately 9,000 and by our own company approximately 600, a total of 9,600.

The average kilowatt hour consumption per domestic customer was 1,046 for the year 1935.

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Received Martin Award for Farm Electrification

By TOM D. FULFORD
General Sales Manager, Puget Sound Power & Light Co., Seattle

DURING 1935 we actively promoted the sale of merchandise through sales campaigns, including the sale of I.E.S. lamps and space heaters during the Fall. We had an active commercial lighting department with ten men in the field and started our activity in home lighting with 12 home lighting women. We also cooperated with the State Chamber of Commerce in the development of mining, industrial and agricultural loads in our state.

In addition to this we received during the year the Martin Award for an outstanding job in farm electrification. This award was for the work done in 1934 and our 1935 program was very similar to the one which won the award.

Our company sold 4,417 ranges; dealers sold 677, making a total of 5,094 sold in our territory in 1935. Our quota for 1936 is 5,500 for our company alone. We have no information as to the quotas contemplated by dealers.

The company sold 2,199 storage water heaters, practically all of which were equipped with a Monel metal tank; dealers sold 516, making a total of 2,715 off-peak storage water heaters sold in our territory during 1935. Our company's quota for water heaters in 1936 is 3,000.

Our company sold 1,187 refrigerators; dealers sold 6,959 during 1935, making a total of 8,146. We have no information as to the quotas contemplated by dealers. Our company's quota for 1936 is 2,500.

In each case the sales figures above represent a signed order and credit approval, but not necessarily a delivery of the merchandise at the time of writing.

The kilowatt-hour consumption per domestic customer on our lines for the 12 months ending Nov. 30 was 1,029 kw.-hr.

Our program for 1936 contemplates following through in a very similar manner with all of the activities promoted in 1935.

Another Helpful Service to
WASHINGTON INDUSTRIES
Industrial Lighting Service
Why Not MODERNIZE Your Plant Lighting?
More for your Electric $
PUGET SOUND POWER & LIGHT COMPANY

This company has started a new series of combined institutional and sales ads like that shown above, stressing the idea, "More for your electric dollar"

City Finances Range Wiring for Customers

By A. ANDERSON
Sales Division, Dept. of Public Utilities, City of Tacoma, Wash.

THE city of Tacoma has no special deals or campaigns. It finances customer's wiring for a range up to a cost of $35. No carrying charge is added in a range sale. Trade-in allowances of $10 are allowed on any cooking equipment turned in, with more allowance if the stove is worth it. But the city only sells ranges and water heaters. As yet we have no program for 1936 other than the above.

Total of ranges sold by the city of Tacoma in 1935 was 326; the dealers sold 250 ranges. Our estimated quota for 1936 is 700 ranges. The City sold 154 water heaters in 1935; dealers sold 245. An estimated quota for 1936 is 600 water heaters. The City sells no refrigerators and has no record of dealer sales.

Kilowatt-hour consumption per domestic consumer averaged 1,563 kw.-hr. in 1935.

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EDITOR'S NOTE—*Following last year's reports inquiry was made by W. G. Vincent, vice president and executive engineer, Pacific Gas and Electric Co., of Ira S. Davisson, commissioner of public utilities, City of Tacoma in order to clear up apparent discrepancies between the figures given in* ELECTRICAL WEST *and those computed from the annual report of the City of Tacoma. In clearing up the apparent discrepancies Mr. Davission furnished a complete table of residential service data, from which the table on page 47, of this issue, listing kilowatt-hour averages, has been corrected. In commenting on these data Mr. Davisson wrote, "although the figures apparently do not agree, yet when their meaning is fully known there is no conflict." He pointed out that the figures in the annual report under "metered services" give the total services connected, even to some that are inactive. He then points out that under the heading "residential service data" the kw-hr. figure included the energy used by those persons having the special residential house heating contract service, while the residential consumption shown in the annual report under the heading "segregation of energy billed—residential" does not include the domestic heating consumption, which is included under "general power." In transmitting this information to* ELECTRICAL WEST *Mr. Vincent concluded with these complimentary words, "Nevertheless this consumption per consumer is probably among the highest of any urban electric system in the country."*

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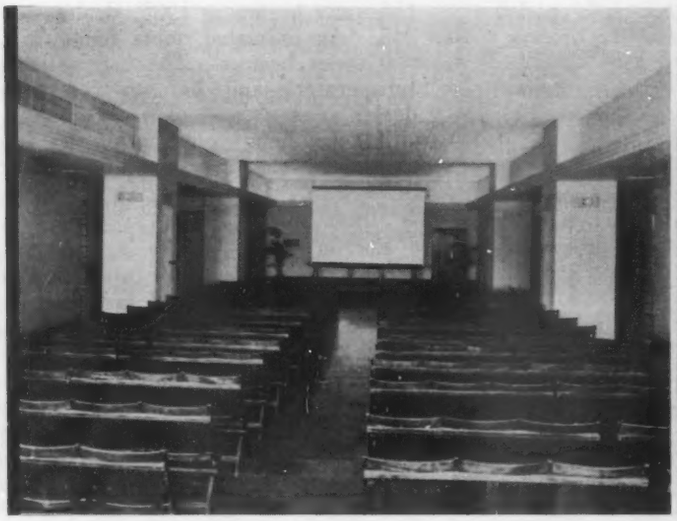
Women Book Auditorium For Remainder of Year

By P. C. SPOWART
Sales Manager, Department of Lighting, City of Seattle, Wash.

READERS of ELECTRICAL WEST may be interested to know we are planning to use the fine auditorium in our new building as a meeting place for club women. Our plan is this: Four days a week clubwomen who have made such arrangements may come to our auditorium for luncheon and any desired entertainment afterward; they may play cards or arrange their own entertainment, or we will provide moving pictures of the Skagit and other educational features. The luncheon is handled by two capable women who have



Auditorium (above) and main display floor (right) in the new City Light building, in Seattle. The auditorium is being used by women's organizations for their meetings

had eight successful years in this field. The food is supplied by manufacturers for advertising purposes, as are other items such as the cooking ware, dishes, range, etc.

Response to this has been little short of amazing. Within a few days we were booked for the entire year, which means that some 18,000 women will be brought into our building, since no group may come oftener than once a year. The first meeting will be held on Jan. 20, and we anticipate the most satisfactory results.

Merchandise sales in 1935 were more than double those of 1934. While figures on load are not available as yet, we anticipate that the total will be considerably higher than last year. But we do know that there were 2,120 ranges sold in 1935, and have set a quota of 3,000 for 1936. There were 990 water heaters sold in 1935, and our quota for 1936 is 500. We ourselves sold 260 refrigerators and expect to sell 500 in 1936. These figures are for our own sales only, and do not include dealer sales, which were likewise large in quantity.

Figures on the kilowatt-hour consumption per domestic consumer for 1935 are not yet available, but we estimate the figure to be over 1,000.

At the present time we are contemplating for this coming year an active program in commercial lighting. This will be in accordance with the Better Light-Better Sight program we inaugurated this year in residence lighting, and which we will continue. We stress the I.E.S. lamps, which we have found to be a fast selling item.

Load building will be our chief consideration in 1936.

"Sell Use and the People Will Buy"

By LEWIS A. LEWIS
Assistant General Manager, The Washington Water Power Co., Spokane

THE program for 1936, as far as residential work is especially concerned, is based on "Sell Use and the People Will Buy Equipment". Our advertising and sales program will be directed towards that end which will mean that our advertising will feature the economic use and convenience of the many uses of electricity. Cooperative advertising campaigns will be carried on with the dealers, who in turn will advertise equipment.

While we will actively merchandise, our effort will be increased in our endeavor to build up more successful dealer outlets, as the results of the first eleven months of 1935 show that the dealers in our territory are now placing four-fifths of the appliances in the homes of our customers. We will continue our efforts on home lighting, home cooking, and water heating.

Kitchen modernization bureaus will be organized in our territory and we will tie-in very closely with the national bureau in an effort to create a desire for all electric kitchens. The F. H. A. plan, if continued, will be made a feature of our efforts in 1936, and our dealers will be interested in this service which enables them to extend payments to their own customers.

Our program also calls for a close tie-in with the Better Light—Better Sight movement. Our commercial salesmen during off-lighting seasons will become all-purpose salesmen rather than specialists in one of our many services.

As usual your printing presses start so soon after the first of the year it is impossible to give complete data. The only information I can give is for the first eleven months of 1935 as follows: The number of electric ranges sold on our system by dealers and company the first 11 months of 1935 totalled 1,278. Our estimate for 1936 calls for a total of 700 electric ranges exclusive of replacement ranges. Replacement ranges should equal new accounts. The number of water heaters sold by dealers and company in 1935 was 1,242. Our estimate for 1936 calls for 1,182. The number of refrigerators reported sold in this territory in 1935, principally by dealers, was 8,695. This number is to be increased next year to 10,000. The Washington Water Power Co. is not a factor in refrigerator sales.

On the basis of the last 11 month activity the average annual kilowatt-hours consumed per residential customer is 1,664.

During 1935 a sustained activity was maintained on electric cooking and off-peak water heating; converting our water heating sales efforts from flat rate water heating to metered service, and 90 per cent of the water heaters sold now are on the off-peak metered service.

Residential lighting in the home was featured for the first time in the fall of 1934 and again for the entire year of 1935 with excellent results, cooperating with the Better Light—Better Sight movement and featuring I. E. S. floor and study lamps.

Commercial lighting has always been an important part of our commercial activity, resulting in an increased load during the year 1935 of 2353 kw.

Commercial cooking and baking is also a very important part of our commercial load, and many of our restaurants and bakeries use nothing but electricity for cooking and baking; 1264 kw. in heavy duty cooking and baking was added to the load during the past year. All the cooking at the Eastern State Hospital for the insane has recently been converted to electric ranges. The Silver Loaf Bakery has recently

been electrified with a large traveling oven; eight or ten fraternity houses at The State College of Washington at Pullman, and at the University of Idaho at Moscow, were equipped with complete electric kitchens during the past year.

The mining and lumber loads are a very important part of our industrial revenue, but we do not consider this competitive and our program merely includes engineering advice in this field.

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Again Sold Large Volume of I.E.S. Study Lamps

By W. J. JOHNSON
Statistician, The Montana Power Co., Butte

DURING 1935 the usual campaigns prevailed, featuring ranges, refrigerators, Mazda lamps, and the customary Christmas campaign on small appliances. The Better Light-Better Sight program initiated in 1934, featuring I.E.S. lamps and including demonstrations in residences, continued through 1935. There were 6,264 I.E.S. lamps sold during the year.

Company sales of ranges totaled 545, water heaters 22, and electric refrigerators 1,554. Dealer sales are not available. The quota for 1936 calls for sales of 640 ranges, 61 water heaters and 1,753 refrigerators.

Average domestic consumption per customer for 1935 was 724 kw.-hr.

Power loads, particularly in mining, showed increases as compared with the previous year.

Campaigns during 1936 will be along the same lines as those in 1935.

•

All Merchandise Sales Increased Over Last Year

By G. W. MILLIKEN
Vice President in Charges of Sales, Southern Colorado Power Co., Pueblo

MERCHANDISE sales in 1935 showed a gain of 25 per cent over 1934. This increase was due to concentration and repeated sales activities on electric ranges, water heaters and refrigerators.

Electric range sales showed an increase of approximately 135 per cent over 1934. Remarkable results were obtained from our three-months trial plan offer of $1.50 per month for a three-month period. This offer was made to our customers so that they could be assured of perfect satisfaction previous to their making actual purchase of a range or water heater.

During 1935 we sold 423 electric ranges, 30 of which were on the replacement plan where we replaced obsolete models. The balance of 293 were new sales.

Seventy-five water heaters were sold during 1935.

Twelve hundred sixteen refrigerators were sold on the lines of the company. This company sold 416 and 800 were sold by the dealers.

Quotas set up for 1936 are: ranges, 324; water heaters, 200; refrigerators, 400. There are no quotas set up for dealers on refrigeration, but it is estimated that they will sell as many machines in 1936 as in 1935.

Kilowatt-hour consumption for domestic consumers for our system for 1935 was 619.4 kw.-hr.

We have tied in locally with the national movement on lighting in promoting Better Light-Better Sight projects, through advertising and personalized plans. While we have concentrated principally on commercial developments in lighting, a reflection of this effort is noticeable in our residential customers. The sale of I.E.S. Lamps has increased substantially and from this reaction we know that our promotional activities have been effective.

During 1936 we will concentrate on ranges, water heaters and refrigerators in a larger measure than 1935. It is our intention to continue with the trial offer plan on ranges and water heaters, and from all indications we expect a banner year in 1936.

•

Mountain....

Every electrical dealer in Salt Lake City joined the free portrait offer idea sponsored by the Electrical League of Utah during the Christmas season. This promotion is but an example of the many co-operative selling plans in which dealers and utility join and profit from the greatly stimulated volume of electrical purchases. A dealer monthly magazine in which the combined sales report of the dealers is published keeps all dealers and distributors up to date on cooperative activities and doings

LEAGUE NEWSPAPER ADVERTISING STIMULATES DEMAND FOR BETTER LIGHTING AND WIRING

Check Up Your Home!
Better LIGHT Means Better SIGHT
Check Up Your Home!
BETTER Light MEANS BETTER Sight
ARE YOU GETTING FULL VALUE from your HOME?
Change those Old Ceiling Fixtures for BETTER LIGHT BETTER SIGHT
Beautify Your Home With Modern Lighting
Add This New Beauty to Your Home
Make Your Home More Comfortable With Adequate Electric Wiring
Put an ELECTRIC OUTLET on Every Wall
Portrait of a Living Room corner
Look Out for Trailing Cords
THE ELECTRICAL LEAGUE

Cooperative Merchandising Broke Sales Quotas

By P. M. PARRY

Vice-President and Commercial Manager, Utah Power and Light Co., Salt Lake City

DURING 1935 we made 126.4% of our merchandise sales quota. We sold 156% of our range quota, 143% of our refrigerator quota, and sold approximately five times as many water heaters as were sold in 1934.

	Company	Dealer	Total
Number of ranges sold on our system in 1935	1,562	417	1,977
Quota for 1936.....	1,750	450	2,200
Number of water heaters sold on our system in 1935	438	8	446
Quota for 1936.....	750	..	750
Number of refrigerators sold on our system in 1935	1,709	5,836	7,545
Quota for 1936.....	1,500	6,660	8,160
Kilowatt-hour consumption per domestic consumer for 1935 on our system			766

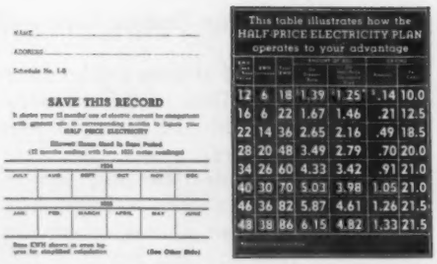
Home Lighting Sales—During 1935 all home lighting quotas were exceeded by a good margin. The total I.E.S. floor and table lamps sold was slightly over 12,000 for the year, or better than 18,000 since Sept., 1934. This gives us a saturation of these lamps equal to 20 per cent of the total number of homes on our lines at this time. These lamps represent a load of approximately 3,000 kw. The total retail value of all these lamps was in the neighborhood of $190,000.00.

During the first 8 months of 1935, we had a force of 9 home lighting advisors. In September this was increased to 31 girls who are all engaged in carrying the "Better Light-Better Sight" story into our customers' homes. They are equipped with home lighting kits, and in addition to giving complete demonstrations they also sell equipment.

Our whole employment organization is engaged in the sale of Better Sight lamps. From Sept. 1st to the end of 1935, 71 per cent of all regular division employes had sold one or more lamps each, and we have three employes who have sold more than 100 lamps each. We think this is a very fine example of cooperative selling.

Industrial—In this department we also exceeded our quotas, due to a revival in the mining industry, as a result of firming of metal prices. Our industrial and agricultural business also showed improvement over 1934. This was a result of better general business conditions.

Our program for 1936 contemplates at least a 20 per cent increase over 1935. We will be more active in all departments than we were last year, and from present indications we should be very successful in reaching our objective.



NAME _____

ADDRESS _____

Schedule No. 1-R

SAVE THIS RECORD

It shows your 12 months' use of electric current for comparison with present rate in corresponding months to figure your HALF PRICE ELECTRICITY

Kilowatt Hours Used In Base Period
(12 months ending with June, 1935 meter readings)

1934					
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1935					
JAN.	FEB.	MARCH	APRIL	MAY	JUNE

Base KWH shown as even hundreds for simplified calculation

(See Other Side)

This table illustrates how the HALF-PRICE ELECTRICITY PLAN operates to your advantage

Base Period KWH Used	Present Month KWH Used	Base Period KWH Used	Present Month Cost	Half-Price Cost	Saving	Saving %
12	6	18	1.39	1.25	1.14	10.0
16	6	22	1.67	1.46	.21	12.5
22	14	36	2.65	2.16	.49	18.5
28	20	48	3.49	2.79	.70	20.0
34	26	60	4.33	3.42	.91	21.0
40	30	70	5.03	3.98	1.05	21.0
46	36	82	5.87	4.61	1.26	21.5
48	38	86	6.15	4.82	1.33	21.5

A card like this was sent to each customer, with meter billings of the past year and space in which to compare the "bargain" electricity offered under the "half price" plan for extra use. The table gave comparative typical bill savings

●

League, Utility and R.M.E.A. Unite in Promotional Drives

PUBLIC Service Co. of Colorado carried the battle for business on many fronts, tying in closely with activities of Rocky Mountain Electrical Assn. throughout the Rocky Mountain region —Colorado, Wyoming and New Mexico—and Electrical League of Colorado in the Denver area.

Sales of electric ranges have been largely limited to the fringe area surrounding Denver, though a gratifying increase was noted in the outlying districts. Total sales in this classification were 350. The budget for 1936 is 608.

For reasons that are satisfactory to the management, promotion of electric water heaters in 1935 was not aggressively featured and only 14 sales were made. The fact that 50 installations are budgeted for this year indicates that Public Service Co. is "on the way."

Refrigeration has engaged the Company's serious attention and a total of 1834 sales were made, with 2,140 forecast for 1936.

Average kilowatt-hour consumption of domestic customers was 541.7 last year. This was a good increase over 1934.

Industrial and mining load jumped considerably. About 14,500 horsepower was added in the year just ended. Translating this increase into kilowatt-hours, the load was augmented approximately 11 per cent on industrial enterprises and 25 per cent with mining customers. Power sales to mining communities in 1935 was about 50,000,000 kilowatt-hours, an improvement from some 38,000,000 kw.-hr. in 1934.

In lighting, both domestic and commercial, the company's progress has been significant. Added load through sales was 466 kw. on the commercial side, and 184 kw. domestic. Promotional work on which no sales were made added 112 kw. to the lines. To the "survey method" of approaching commercial jobs is attributed a large part of the increase.

To summarize merchandising accomplishments, upward of $800,000 represents the Public Service Company system's volume of sales in 1935. This figure, of course, includes the turnover in several departments, lamps, for instance; electric fans; electric kitchen mixers, toasters, coffee makers, percolators, electric roasters and a multitude of other appliances.

The company's 1936 program contemplates very definitely a dealer cooperative plan on a very broad basis. This will be furthered through, and in cooperation with, the Rocky Mountain Electrical Assn. and Electrical League of Colorado.

In addition, Public Service Co. of Colorado will carry on intensive work through educational channels with all company employees; an intensive drive on refrigeration and electric ranges; promotional activities on storage water heaters and air conditioning; an elaborate program dramatizing Better Light —Better Sight along the lines of eye conservation and better home lighting; a commercial lighting program with architectural tie-in both for indoor and outdoor illumination; and last, but not least, an extremely energetic, cooperative, specialized I. E. S. portable lamp sales campaign.

The company also proposes to continue sales endeavors pushing household appliances of all kinds, and plans to support this kind of appliance selling by an advertising and educational program on proper wiring, featuring adequacy in all its phases.

The importance of Rocky Mountain Electrical Association and Electrical League of Colorado activities as stimulant to company cmapaigns can hardly be over-estimated. Both of these organizations contributed greatly to development of the cooperative spirit which, in turn, was responsible for a much improved volume of sales. While it is true that Public Service Company does not transact so high a percentage of total electrical merchandise sales in Colorado as formerly, the dollar-volume is greater. It is estimated in the Denver area that where the percentage a short time ago was 80-20 in favor of the company, the ratio is now about 60-40, with dealers and company, alike, transacting more business.

R.M.E.A. Activities Many

The scope of Rocky Mountain Electrical Assn. activities in 1935 was broader, more completely cooperative, more aggressive and more successful than at any time in the past.

A quick resume, gleaned from monthly reports submitted by George E. Lewis, manager, to member executives of R.M.E.A. shows that:

January and February saw the 1935 Better Business Development program, embracing Colorado, Wyoming and New Mexico, crystallized by formation of a coalition advisory council, composed of R.M.E.A. and Electrical League of Colorado personnel. This council, chairmanned by Guy W. Faller, included 27 ranking officials of utilities in the three Rocky Mountain Region states, together with manufacturers, distributors, contractor-dealers and other electrical interests on key committees, unifying the entire situation and establishing a cooperative working set-up flexible, far-reaching and comprehensive.

In March and April, a $50,000 budget was allocated for prosecution of the year's plans. Local branches of R.M.E.A. were established throughout Colorado, Wyoming and New Mexico, rendering the various activities easier to execute. These units are known as "The Electrical League" and are, in essence, R.M.E.A. chapters. The association was instrumental in promoting the Federal government's modernization campaign which climaxed in a huge Modernization Fair at Denver; also in the annual Clean-Up, Paint-Up activity which included the "Light-Up" aspect as well as name. A home laundry equipment window display contest, radio broadcasts and other publicity measures were employed.

May and June, these activities occupied the time of association committees and executives: The government's better housing crusade in which emphasis was placed strongly on adequate wiring and equipment; promotion of electrical shows in several localities outside of Denver; electric cookery; yard and garden lighting (an Electrical League of Colorado event for Denver and environs with R.M.E.A. lending support); joint refrigeration and appliance sales contest embracing the tri-state area; extensive advertising in newspapers and other media; broadsides on electric cookery and publication of Electri-Gram for the benefit of some 4,000 dealers in electrical wares whose business was greatly stimulated by merchandising ideas thus circulated.

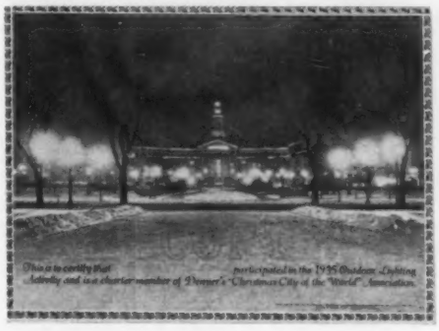
July witnessed further extension of Electrical League units in western and southern Colorado; growth of attendance at the twice-a-month joint meetings of R.M.E.A. and Electrical League of Colorado where progress of committees functioning to defeat the "summer slump" was reported; stimulation of electrical expositions in conjunction with Federal Housing promotion; development of business on automatic water coolers, refrigerators, electric ranges and outdoor lighting.

August, successful steps were taken to advance the F.H.A. program for financing installation of electrical equipment; wiring and lighting divisions of the association went vigorously into action on their fall promotional campaigns, with "Modernize Electrically" the theme. Yard and garden lighting reached its peak; unprecedented water cooler sales were recorded; service was rendered to several companies in the matter of tax data, etc. applying in localities where municipal ownership agitation prevailed.

September, R.M.E.A. convention at Estes Park served to bring together the greatest gathering of all electrical interests in the region's history. A direct result of the convention was launching a series of load-building activities on the properties of four New Mexican utilities. Association Manager Lewis personally aided in the planning and organization work which set up campaigns on: Better Light-Better Sight, radio, re-wiring, Christmas lighting, electric ranges, etc., all tying in with the overall business development. In cooperation with the Electrical League of Colorado, the association launched a Denver campaign on Better Light-Better Sight and sale of I.E.S. lamps. Promotional work was done on home laundry equipment, chiefly through newspaper advertising. Preliminary plans for the annual "Give Something Electrical For Christmas" merchandising activity were made.

October was largely devoted to detailing a comprehensive end-of-the year load-buiiding program, designated as the Electrical Jubilee. Association headquarters rendered material assistance to three member companies on municipal ownership problems and formulated re-wiring and re-fixturing plans.

November and December were dedicated to the multitude of Electrical Jubilee activities in which 500 dealers, utilities, contractors,



Denver's mayor gave each city resident who decorated his house or trees outdoors this certificate as a member of the "Christmas City of the World Assn."

distributors and other establishments in Colorado, Wyoming and New Mexico participated. Much Jubilee material, such as banners, window trims, posters, etc. was purchased by utility companies in South Dakota, Utah, Nebraska and Oklahoma where the Christmas merchandising program was adopted for local use. Over $600,000 in prospective business was developed at the Denver Electrical Exposition; proportionate results in 49 other towns.

The Jubilee involved distribution of 107,500 posters, window stickers, banners and mailing pieces; 2,000 window and interior displays of electrical appliances; 25 pages of newspaper advertising; five pages of news material, radio broadcasts reaching 2,000,000 listeners. Beginning coincidentally with Electrical Housewares Week, the activity continued until Dec. 24. During this period, R.M.E.A. aided promotion of Christmas lighting observances and contests in the Mountain states.

Beginning Jan. 2, 1936, Rocky Mountain Electrical Association began its lighting campaign, touching on yard safety lighting, all-purpose lamps, floor lamps, kitchen units, table lamps, pin-it-up lamps—all to be known as *Better Seeing* lamps. A prolonged, concentrated drive for wiring adequacy to pave the way for increased appliance sales will dominate throughout 1936.

League Activities Outlined

The Electrical League of Colorado on Dec. 27, reelected the officers who guided the organization through its busiest and best year: E. E. Brazier, regional manager of the General Electric Supply Corp., president; O. L. Mackell, assistant secretary of Public Service Co. of Colorado, secretary, and Dean D. Clark, assistant to the president of Mountain States T. & T. Co., treasurer.

Looking back over the 1935 record, these executives have reason to view League accomplishments with pride. Not only did the League function as a powerful co-partner with Rocky Mountain Electrical Assn., serving as hub and central rallying point in Denver for numerous tri-state activities, but it also carried on its individual battles, in its own way, for the betterment of conditions as applying to dealers, contractors and cooperative movement.

Early in the year, when the scope of F.H.A. loans was not clearly defined, League Manager George Bakewell, Jr., wired Washington for a ruling on eligibility of heavy duty electrical equipment in the home. Back came a reply from headquarters: "Recent amendment to Title One Federal Housing Act makes it unnecessary that refrigerators, washing machines and mangle ironers, electric ranges and water heaters be permamently attached to real property to be eligible for insured modernization loans." This message, broadcast to the industry, loosened bank credits to finance electric equipment sales.

During the summer, League committees charged with business development promotions met five times a week to step up current merchandising campaigns. As a result, there was no "seasonal slump" in Denver for electrical dealers and contractors.

Here are a few other sparks from Electrical League of Colorado's promotional dynamo: Participated energetically in Better Housing Exposition and Clean up, Paint up, Light up campaigns; budgeted $25,000 quota (with R.M.E.A. contributing an equal amount) to the Tri-state business development activity; sponsored a code on merchandising of electric refrigerators; sponsored Dr. Matthew Lukiesch in a series of lectures, radio broadcasts, etc. in conjunction with the "New Science of Seeing" campaign; sponsored a sales clinic by George W. Irving on "The Human Element In The Sale"; conducted a radio exposition through advertising; carried on a continuous advertising campaign, beginning in May, concentrating its power on current promotions such as lighting and wiring, yard and garden lighting, Better Light-Better Sight, refrigeration, electric cookery.

Almost single-handed George Bakewell directed League activities during the first six months of 1935. In July, John A. Baker was re-appointed field representative, releasing Bakewell from field work to concentrate on other duties: Issuance of a Red Seal folder; planning the League's annual picnic and golf tournament; enabling him to plan late-1935 business development activities. Baker's distinguished record on adequate wiring accomplishments will be available later.

Personal contacts looking toward the

Electrical Jubilee, Dec. 2 to 24 unified the industry in Denver for a three-weeks' selling campaign prior to Christmas. This period was simultaneous with preparations for the Christmas lighting contest.

An original promotion by Electrical League of Colorado thirteen years ago, Christmas outdoor lighting contests, patterned after the one in Denver, prevailed in all of Colorado, Wyoming and New Mexico in 1935.

Furthermore, the League's insistence, backed by strong resolutions directed to Denver's mayor, resulted in the appointment of an additional inspector to supplement the present municipal electrical inspection force.

Messrs. Brazier, Mackell and Clark enter 1936 pledged to "break the bottleneck of wiring inadequacy" as a means to sales of electrical appliances which cannot now be sold for lack of outlets. Chairman of the various divisions, who will serve as League directors in 1936 follow R. Y. Chedister, contractor-dealer; J. A. Mayer, distributros; J. J. Cooper, manufacturers; G. B. Buck, utilities.

Southwest...

May Discontinue Trial and Rental Plans

By ROBERT MEAD

Public Service Dept., City of Burbank, Calif.

MERCHANDISING plans for 1936 are still in the process of formation. We probably will not continue with the trial-rental plan in its present form, partly because it has served its initial purpose (that of arousing interest in electric cookery on the part of customers), and because we have found that in the face of fuel competition the range that is sold produces a more wholesome attitude on the part of the user than does the range that is rented. Also, terms and purchase plans are now favorable enough so that the rental plan is not much more attractive financially to the customer than is a straight purchase plan. The trial-rental plan (by which rental fees are applied against the purchase price of whatever range the customer decides to buy at any time before or at the end of the twelve months' rental period) has not as yet been officially discontinued, but may undergo some changes in the near future so that it may be adapted to present conditions.

During 1936 we plan to continue with advertising, promotional, and home economics activities in much the same manner as in 1935. During the latter year we cooperated with the dealers in staging one theater cooking school, and in presenting for inspection by the public one new model all-electric home. We will continue to distribute leads among the dealers, and will aid them in selling.

We will organize our activities so as to cooperate with those of other utilities in this territory, hoping that in all of southern California 1936 will be the greatest load building year in history.

A total of 75 electric ranges were connected to our lines during 1935. These range installations are subdivided as follows:

Sold by dealers	30
Sold by Public Service Dept.	20
Trial-rentals obtained by dealers	9
Trial-rentals obtained by Public Service Dept.	4
Move-ins	12
	75

A total of 19 water heaters were installed.

Water heaters sold by dealers	12
Water heaters sold by Public Service Dept.	7
	19

A total of 485 electric refrigerators were sold by the local dealers. Our work on refrigerators is still entirely promotional. We do no direct selling.

No official major appliance quotas for 1936 have been established. However, we expect to install around 100 electric ranges, 30 water heaters, and 500 refrigerators during the coming year.

The kilowatt-hour consumption per domestic consumer for 1935 for our system was 601.

Merchandising plans laid early in 1935 were carried out as intended with very few deviations. We continued to cooperate with the local appliance dealers in every way possible. Our advertising was almost entirely promotional, advising the customer to see his dealer or ourselves for further information on any of the appliances advertised. A few better light-better sight ads, and a few small appliance ads of a general nature were run at various times during the year. Additional advertising emphasis and sales effort upon electric water heating produced an increase in sales.

Sales records will also show that the percentage of total range installations which were trial installations was lower in 1935 than in 1936. This was due to a lessening of emphasis upon the trial plan in favor of direct selling. Our experience with regard to refrigerator sales was the same as that of the other utilities in this territory. Refrigerator sales increased tremendously over 1935.

The space heater business was very good during the fall of 1935. Seven homes were made all-electric, including cooking, refrigeration, water heating, and space heating. Two more all-electric homes are now in the process of construction.

Cooking classes were held regularly once a week in the model electric kitchen. Each week selected prospects were invited to come to the class, which was informal and small enough so that those in attendance felt free to ask questions and to discuss electric cookery with the home economist.

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Air Conditioning Takes in Arizona Wet or Dry

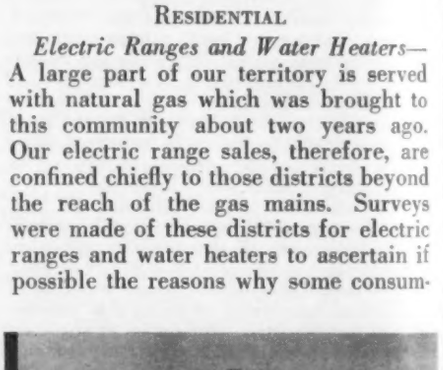
By A. F. MORAIRTY

Vice President, Central Arizona Light & Power Co., Phoenix

IT MUST be appreciated that we are not actively engaged in selling any small appliances; that we sell refrigerators only for dealers; that our salesmen are paid a load-building bonus rather than a commission whether they make the sale through the company or through the dealer; and that we are endeavoring to build and strengthen dealers rather than merchandise through company sales. Therefore, a report of merchandise sold by us would not reflect the results obtained.

RESIDENTIAL

Electric Ranges and Water Heaters—A large part of our territory is served with natural gas which was brought to this community about two years ago. Our electric range sales, therefore, are confined chiefly to those districts beyond the reach of the gas mains. Surveys were made of these districts for electric ranges and water heaters to ascertain if possible the reasons why some consumers were using substitute fuels for cooking and water heating brought about because of the depression. Sales efforts were based on these surveys.



Even semi-open markets such as this installed air conditioning in the almost universal adoption of this new electrical service by stores, shops, factories and homes in Phoenix

Refrigerators—Due to the activity of dealers, assisted by our cooperative plan, and financing through F. H. A., almost 3,000 refrigerators were sold in our community. Our company employs a dealer cooperator whose entire time

is devoted to assisting dealers and obtaining reports as to their results. An advertising allowance is given to each dealer making monthly reports and based upon the number of refrigerators he sells. This advertising allowance must be expended through radio or newspaper advertising. The company sells no refrigerators except for dealers.

The number of ranges sold on our system in 1935 and quota for 1936:

Company		Dealers		Total	
1935	1936	1935	1936	1935	1936
72	90	90	104	162	194

Number of water heaters sold in 1935 and quota for 1936:

Company		Dealers		Total	
1935	1936	1935	1936	1935	1936
13	63	12	31	25	94

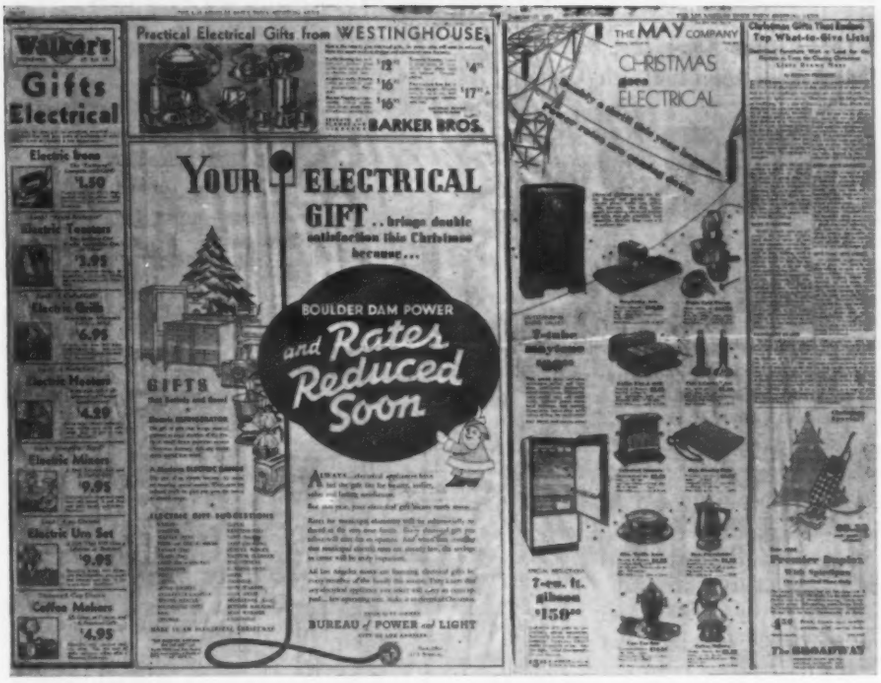
Number of refrigerators sold in 1935 and quota for 1936:

Company		Dealers		Total	
1935	1936	1935	1936	1935	1936
80	100	2911	2350	2991	2450

Small Appliances — Ordinarily, the company does not sell small appliances except during a special campaign for a specified small appliance, in which all dealers are tied in. The company furnishes the entire promotional campaign for the small appliance and aggressively leads the way for all the dealers for a period of about three weeks. The company maintains a display on its floor of different small appliances throughout the year for the dealers.

Air Conditioning—Due to the company's promotional efforts and to the assistance of company salesmen for dealers, a comparatively large amount of residential air conditioning was sold during 1935. A large number of direct expansion installations were made, over one hundred extended surface installations were made, and between two and three thousand home-made "wet" systems were installed in the homes of this community. While this "wet" system is only partially satisfactory, it can be used with some degree of success in an arid country such as we have, on days when the humidity is low. The important fact about the large number of "wet" systems installed in homes is that it indicates public acceptance of residential air conditioning. From these thousands of "wet" systems, we will secure prospects to whom better equipment will be sold in the future.

Lighting—In the first part of 1935, three lighting supervisors were employed and in the latter part of 1935 four lighting supervisors were employed with very good results. Investigation of the revenue received from customers contacted by supervisors definitely indicates increased load. We have not directly sold I. E. S. lamps, but the supervisors have sold them through the dealers.



How the big department stores of Los Angeles took adrantage of the Bureau of Power & Light ad announcing rate reductions is shown in the reproduction of a two-page spread, above

COMMERCIAL

It was noticeable that, due to the improvement in business conditions, a number of additional small commercial customers were secured. Some already connected customers increased the amount of their load. We secured additional commercial air conditioning of small business houses and small office buildings. All the large office buildings, hotels, theatres, etc., installed air conditioning previous to 1935. Agricultural power sold about equalled that sold during the previous year.

Considerable increase in commercial lighting was noticeable with many stores adding to and improving both their store and window lighting.

During 1936, we will continue the program of 1935. However, we will emphasize and increase our activities in both residential and commercial lighting and residential air conditioning, and will particularly direct our efforts toward building and assisting dealers. The first part of 1935, we had 26 electrical dealers reporting regularly and at the end of 1935 we had 61 electrical dealers reporting their sales. There is a much better acceptance on the part of the dealers of the efforts of the power company. I believe they realize we are sincerely trying to help them. There is no doubt but that our program of building and assisting dealers and cooperating with them in all our campaigns has resulted in greater load being sold. During 1936, we will also add a Home Service Department.

Trial and Financing Plans Contemplated for Ranges

By BURDETT MOODY

Business Agent, Bureau of Power and Light, Los Angeles

OUR 1936 program contemplates considerable expansion of advertising and sales effort with possibilities of a trial and finance plan for securing electric ranges and water heaters in homes, stimulated with a considerably lower residential schedule effective Feb. 1, 1936. This schedule includes a water heating rate of ¾c per kilowatt-hour with a range operating cost reduced approximately 18 per cent, and space heating costs, 16 per cent less.

Our commercial lighting and industrial power schedule will also be reduced approximately 10 per cent. We hope, with continued promotional sales efforts, to secure added industrial load that will more than equal the loss in revenue due to the reduction.

Newspaper and magazine advertising will be continued to the same extent for the promotion of lighting, cooking and baking in restaurants and drug stores, and a direct mail program for securing industrial heating will be directed to our power consumers.

A short summary of the 1935 commercial programs and results follows:

New building construction for commercial and industrial building has shown moderate improvement and we

have secured a number of new industrial plants, a number of market buildings, and a few apartments of moderate size. Our greatest and most productive activity has been in the promotion by our salesmen of new load to our existing consumers; covered in commercial lighting, air conditioning, and commercial cooking and baking equipment.

Commercial Lighting—We have secured 879 applications, resulting in adding 5,381 kw. for an increase of $118,722 in estimated annual revenue. Most of this business has been added load secured on programs of modernization. There has been load added in service stations, stores, markets, and theatres, advertising signs, new fixtures and lighting equipment in interiors, and all-luminous glass lighted fronts for theatres, stores, and service stations.

Commercial and Industrial Power—We have secured 1,752 applications, resulting in the addition of 13,927 hp. which brings an addition of $178,035 in estimated annual revenue. In this total, new industries are represented by chemicals, with 2,400 hp.; flour milling with 900 hp.; approximately 1,000 hp. in individual pumping, light, and drilling in a new oil field; air conditioning, approximately 500 hp., consisting of applications for restaurants, office buildings, and department stores.

With general improvement in those industrial plants that have weathered the depression, we have been able to place approximately 1,000 hp. of load in industrial heating equipment, ovens for enamelling, heat treating, drying, and welding equipment.

The number of ranges sold on our system for 1935 was 1,226, and the quota for 1936 is 2,500. The number of water heaters sold in 1935 was 280, and the quota for 1936 is 1,000.

Refrigerators sold in 1935 are estimated by dealers to have totaled 10,000. We do not know their quotas.

Kilowatt-hour consumption for domestic consumers for 1935 on the Bureau's lines was 602, a substantial increase over last year.

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Figures in Los Angeles Duplicate Each Other

By FRANK WEISS
Manager of Sales and Advertising, Los Angeles Gas and Electric Corp.

OUR corporation does not merchandise appliances and therefore has no figures available. To secure from the various dealers operating in this territory any such figures would be an almost impossible task. And possibly such figures would not present an accurate picture because of duplications or omissions that would be inevitable.

Dealers Start First New Year Range Sale

By W. L. FROST
Vice President, Southern California Edison Co., Ltd., Los Angeles

THE Southern California Edison Company during 1936 will continue the cooperative, electrical industry business development program carried on throughout the past year.

All phases of our 1936 program are based on cooperation with all branches of the electrical industry and all users of electrical service. At the company's annual meeting of officers, division and district managers and department heads at Los Angeles, on Dec. 31, our plans for the new year were set in motion. Last year, due to the activities of electrical dealers in our southern and central California territory, aided by our own promotional efforts, sales of electrical equipment for household service showed improvement over the several preceding years. Dealer sales of electric refrigerators totaled some 34,855, nearly double the number sold in 1934. Records of sales of other electrical equipment for homes showed 5,385 ranges, 2,628 water heaters, 30,000 washing machines, 5,000 ironers, 50,000 radios and 97,000 small appliances.

In other fields of commercial activity, the company experienced a satisfactory year. Company power and sales engineers worked closely with power and light users, domestic, commercial, industrial and agricultural consumers, to assure the most beneficial use of their electrical service. It is anticipated that 1936 will see further impetus given the trend to complete electrification of many classes of industry and agriculture.

CALIFORNIA'S *Electrical Age* HAS JUST BEGUN

Slogan

The Electrical Development League of Southern California has announced the adoption of "California's Electrical Age Has Just Begun!" as the League's official slogan. F. L. Hockensmith, general manager, who announced that the slogan had been selected by the sales promotion committee and approved by the board of trustees, said the League is asking the electrical industry of Southern California to apply the slogan to all advertising copy, letter heads, billboards, business cards and the like. The slogan has found ready acceptance and its general use throughout southern California is expected.

The number of active meters on our system has increased more than 17,000 since Jan. 1, 1935, and the number of idle meters is at the lowest point in the last seven years. The increased activity in the industrial field and in other service classifications has resulted in a net increase in the connected load of 113,000 hp. for the year. For industrial use alone, the sale of electricity is above that of last year by 14 per cent. Likewise, in the domestic field there has been an increase of 9 per cent, which indicates that consumer purchasing power has shown substantial improvement and that consumers are extending the use of the electric servant.

The company's opening sales promotion campaign for 1936 is now under way, with emphasis on the electric range and water heater features of the all-electric kitchen. The opening campaign, started Jan. 8 and scheduled to continue until April 15, is backed by an energetic advertising drive bringing into play newspapers, direct mail, out-door advertising, radio, window display material for dealers and use of Electrical Times, the Edison consumer magazine with its 325,000 monthly circulation.

An outstanding feature of the campaign, as announced by H. C. Rice, our merchandising manager, is the premium offer of a complete set of Pyrex cooking dishes to be given by dealers to each purchaser of an approved, new electric range or water heater during the campaign dates. The company has made Pyrex sets available to distributors at $2 each, the company standing a like amount for each set. Premium certificates have been prepared by the company for distributors to issue to dealers.

Newspaper advertising will be the backbone of the promotional drive. R. G. Kenyon, advertising manager, has prepared three separate and complete campaigns for the three-month period, with copy to be placed at frequent intervals in 170 newspapers. All other advertising will tie in with the newspaper copy theme, "Start Your All-Electric Kitchen Now."

During the campaign 50,000 homes in Edison territory will receive copies of the most unusual and effective direct mail pieces the company has ever used, a testimonial folder listing more than 4,000 electric range users by name and address, and showing photos and testimonials about ten makes of ranges. The users listed are those who installed ranges in Edison territory in 1935.

Dealers throughout the Edison system are reported by Edison dealer contact staffs to be enthusiastic over the campaign plans and prepared generally to tie in with the new year activities. Quotas for 1936 are confidently expected to be well exceeded. The system

How successful have been the co-operative range programs of the Edison Company is evidenced by this carload of ranges being delivered to one dealer in the San Joaquin Valley

quota for ranges is 7,500, water heaters 4,000, and refrigerators 30,000.

Final figures for 1935 are not available, but based on the trend for the last few months, however, it is reasonable to expect that the figure for the average annual domestic consumption will approximate 737 kw.-hr.

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Dealers Did a Superlative Load Building Job for Us

By A. E. HOLLOWAY

Vice President in Charge of Sales, San Diego Consolidated Gas & Electric Co.

SALES accomplishments of 1935 have prompted the San Diego Consolidated Gas and Electric Company to expect unprecedented achievement during 1936. Responsibility for the addition this year of 16,000 kw. in connected load from appliance sales alone rests almost exclusively with the 200 electrical dealers and contractors doing business throughout the territory served. Eighty per cent of a generous advertising budget devoted to the promotion of new electric business will be spent in behalf of this group under the leadership of the Bureau of Radio and Electrical Appliances.

Unlimited credit is due this organization, its officers and secretary for the Bureau's response to cooperative programs conducted during 1935 which resulted in a wave of buying in which even the stiffest of quotas were reached and, in many cases exceeded by the middle of August of last year.

Domestic electric meters on company lines total 65,000, the recognized field for the sale of all electric appliances with the exception of ranges and water heaters. Sales efforts on these major items are confined to a limited field of 6,725 meters, the difference between the company's gas and electric residential customers. Considering this fact, the sale last year of 375 ranges and 591 water heaters within this confined area is a record of which we are justifiably proud.

The company's merchandising department accounted for 280 range sales and 450 water heaters, the balance being sold by aggressive dealers. Realizing that there is a very definite saturation point in the sale of this kind of equipment, due to territorial restriction, a quota for 1936 of 300 ranges; 300 water heaters is logical.

Perhaps the most remarkable showing of 1935 was in the sale of electric refrigerators, a total of 6,850, or over one new refrigerator to every 10 residential customers. Similarly, the sale of radios (not including automobile installations) reached a new high with over 12,000 sales recorded, or almost one to every five residential customers. The company's merchandising department sold but 297 of the 6,850 refrigerators and no radios.

With the added stimulation of the Bureau's Third Annual Electrical Exposition attended by over 80,000 visitors and held the first week of December, Christmas business far exceeded all expectancies. A concentrated drive in behalf of better lighting featuring the I.E.S. lamp was a successful year-ending promotion which accounted for the sale of large numbers of I.E.S. lamps by both the company and the dealers. The activity assisted dealers to sell a large volume of the new I.E.S. lamps and every indication is that better lighting will have a banner year.

With a goal of 7,000 electric refrigerator sales this year, the Bureau is already planning its annual Chilled Food Institute to usher in an early refrigerator season, which, together with a Fourth Annual Electrical Exposition and a more pleasing representation of things electrical at California's 1936 Exposition, should go far toward increasing the 1935 annual average use of 637 kw.-hr. per domestic customer.

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Exposition Climaxes Year of Exceptional Sales

By J. CLARK CHAMBERLAIN

Secretary-Manager, The Bureau of Radio and Electrical Appliances of San Diego Counpty

PREDICTIONS made last year were full of optimism, but with every quota far outdistanced and all-time records established for most appliances, we fared better than most of us believed possible. A fitting climax to a grand year was our unprecedented volume of Christmas business. Refrigerators which we had always hoped would sell generously at this time of year, really delivered during the Holiday season. Sales of refrigerators have been made more than double the number sold in December of last year. Radios, vacuum cleaners, laundry equipment, mixers, and in fact all types of electric appliances sold in such volume as to make one wonder from where business came.

Despite the fact that saturation of a number of appliances have mounted rapidly, we see no reason why 1936 should not top even the great volume of electrical business done during the year just closed. We predict substantial increases, perhaps averaging 20 per cent, and our Bureau is prepared to help make this prediction come true. Our co-operative campaigns of the past year have been the strongest yet, but this year will find our organization promoting the welfare of dealers and distributors as never before.

Our first program of the year to promote radio sales is already underway and our whole cooperative technique, developed so thoroughly last year, this year will find our organization equipped to promote the welfare of dealers and distributors as never before.

A brief chronological record of the Bureau activities during 1935 goes to show that it has been necessary to keep the public stimulated on electrical appliances in order to gain the wonderful volume which has been recorded.

Last year's activities opened with an unusual automatic ironer campaign featuring the theme, (in 16 newspaper advertisements) "Would you push an Elephant, etc." It proved a wonderful sales builder for dealers. Washing machine sales were also helped by this ironer promotion.

To tie in with America's Exposition a dinner was staged in February opening a short-wave radio campaign, "Calling All States". In cooperation with the radio amateurs and exposition officials the program was carried through March and part of April in which 10,000 radio messages were delivered to various dealer stores to be sent to all parts of the nation inviting relatives and friends to the Exposition. This was supported by broadcasts from both radio stations, newspaper advertisements, outdoor bill boards and street car advertising.

Refrigeration advertising and promotion was started early in April, building up to the second annual Chilled Food Institute. This show was held at the San Diego Hotel from April 27 to May 1 and was highly successful. All makes of refrigerators distributed in San Diego County were shown by invitation. Follow up interest in May capitalized the Federal Housing Administration possibilities for financing of refrigerator purchases. Several banks were induced to cooperate and also carried advertising on the subject. The Bureau also took an active part in attempting to ward off a proposed 10%

State luxury tax on radios, which was finally defeated at Sacramento.

A unique "*magic word*" campaign for refrigeration was launched, using both radio stations for seven weeks and generous newspaper copy, as well as dealer tie-in window cards. Each of the 14 broadcasts featured the name of a different refrigerator and from these names a contest was conducted to derive the most words from each name. Contest blanks were obtainable only at dealers' stores. More than 450,000 words were submitted and public interest in the contest was amazing.

In August the second F.H.A. financing advertising campaign was launched featuring all eligible appliances, including ranges. Again banks cooperated.

In September a birthday banquet celebrating the "35th Anniversary of Electric Appliances" was held at El Cortez Hotel. This was a most successful party, honoring the old time dealers and purchasers of electrical appliances. The fall program of the Bureau was outlined and started at this big meeting. Dealers featured in their window displays the contrast between the early appliances and their modern counterparts.

Likewise was started the "Radio Appreciation" series of broadcasts in which a clever preview of the following week's program was announced and the reason for owning a modern radio in order to enjoy these features was shown. These continued into October. Coincidentally a lighting activity started in October. I.E.S. lamps were strongly supported through a continued series of newspaper ads and a fine radio program called "The Miracle Man".

Christmas advertising and campaign broke Nov. 17 using the theme of "She Hinted, He got it". Billboards, street car cards and window cards tied in with this theme. The general Christmas campaign carried through the holidays was the best we have seen. From Dec. 4 to 8 our Third Annual Electrical Exposition was held in the Municipal Pier building. Staged as a Christmas show with the deliberate intent of causing visitors to buy, even our most sanguine hopes were exceeded. Attendance was more than 80,000 for the four days and five nights, taxing all facilities to the utmost. Selling, or order taking was the order of events. All who participated feel convinced that the show had a great deal to do with establishing a December all-time sales record in San Diego.

Through this Bureau dealers are returning a monthly post card sales report. Returns are more complete and accurate as the months go on, which we feel is an index of the value in which this work is held by the dealers.

Any attempt to express an appreciation of cooperation would be flat without reference to the ever present help of the San Diego Consolidated Gas & Electric Co. Because we have a tangible, business-like and representative organization, maintained in the interest of appliance sales, we are enabled to use their advertising funds for our promotions. Credit for the success of many campaigns must be more than shared with our advertising advisor, Forrest Raymond, who superintends the advertising of this utility. May his well of ideas never run dry!

Below is a reproduction of the front page of the special edition of a San Diego newspaper which dealers and distributors filled with ads and articles on electrical wares before Christmas

Consistent Effort During Entire Year Best

By GEORGE T. BIGELOW

Manager Commercial Department, The Southern Sierras Power Co., Riverside, Calif.

THE quotas we set up apparently seem low in comparison with the number of appliances sold in previous years, but I do not believe in high quotas, my experience having been that men do far better if they have a quota which they can reach. When they have reached it there is no inclination to quit work, but rather to go ahead and see how far they can exceed it.

We cannot give actual figures at this time, but have to use eleven months actual and one month estimated. Furthermore, we have no record of dealers' sales, so I can only give the number of sales made by us.

In 1935 we sold 552 ranges, and our quota for 1936 is 385. We sold 493 water heaters and set up a quota of 400. We sold 387 refrigerators and have set up a quota of 300. All of these figures are well in excess of sales during last year. Our average kilowatt-hours per domestic consumer for 1935 was 965, based on eleven months actual and one month estimated.

In 1936 we intend to campaign washing machines and ironers from Jan. 13 to Feb. 22, ranges March 1 to April 30, refrigerators May 1 to July 31, water heaters Sept. 16 to Oct. 31, and ranges Nov. 1 to Dec. 31.

We have no special plans other than those we have used in the past during these campaigns, as you know we do not stress the lamp socket appliances in our selling, leaving that practically entirely to the dealers. I feel that with our 48 month plan on ranges and 72 month plan on the flat rate water heaters we do not need to add any inducements of any kind.

The year 1935 we believe has been extremely successful not only for the merchandising, load building line, but in the light and power end. In the lighting field our illuminating engineers try primarily to get adequate wiring in both homes and business establishments and are not putting on campaigns of any kind that have to do with the sale of lamps. This has been our policy for some time past and seems to give us the best results.

In the mining field the load has increased very satisfactorily, although there have been no new strikes of any size or importance on our system. There is a gradual coming back of the workings of the old mines.

Agriculture has not followed as rapid a come-back. The total load of our system was in excess of any previous year, and we believe that 1936 will show an equal increase.

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Gains Reflected in All Commercial Indices

By H. A. LEWICKI

Sales Manager, Dept. of Public Utilities, City of Alameda, Calif.

A CAREFUL check has been made to determine the number of electric ranges and water heaters that are on our lines. We have, as of Dec. 31, 1935, 788 ranges and 103 water heaters, connected. During the calendar year of 1935, there were sold and connected in the city of Alameda 171 ranges, 386 refrigerators, 502 radios, 90 ironers, 240 washing machines, 144 air and 30 water heaters.

A quota of 300 ranges has been set for the sales department for the fiscal year of 1935-1936.

Domestic Kw.-hr. Sales Statistics for Residential Consumers, Bureau of Electricity, City of Alameda.

Year Ending Dec. 31	Ave. No. Residential Customers	Gain Over Preceding Year	Total Kw.-hr. Sales	Gain Over Preceding Year	Total Revenue	Gain Over Preceding Year	Ave. Kw.-hr. Sales per Residential Consumer	Gain Over Preceding Year	Average Revenue per Residential Consumer	Over Preceding Year
1932.....	9,770	32	7,339,129	166,372	$291,048.00	$ 1,615.00	750.0	13.5	$29.78	$ .07
1933.....	9,632	—138	7,137,137	—201,992	278,114.00	—12,934.00	740.2	—9.8	28.87	—.91
1934.....	9,425	—207	7,226,445	89,308	291,792.00	13,678.00	765.6	25.4	30.96	2.09
1935.....	9,606	175	7,957,551	731,106	308,765.00	16,973.00	828.9	63.3	32.16	1.20

Our merchandising program has two phases. The statement above is the merchandising division. The results of our load building efforts is shown in the table on this page.

That table shows the average kilowatt-hour consumption for each residential consumer and revenue therefrom per consumer for the calendar years of 1932, 1933, 1934 and 1935.

It also shows that the average kilowatt-hour sales per residential consumer in 1932 was 750 with an average annual revenue of $29.78, while in 1935 the average was 828.9 kw.-hr. with an average annual revenue of $32.16.

We have sold an average of 78.9 kw.-hr. more current per residential consumer during the year of 1935 than we did in the year 1932, with an average increase of $2.38 per consumer, notwithstanding the fact that there has been a gradual reduction in the price of the energy consumed.

During the month of December an outdoor Christmas tree contest was held. There were 41 entries among whom 16 prizes were distributed.

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Will Help Stimulate Air Conditioning Next

By F. G. HODGE
Dealer Representative, Sierra Pacific Power Co., Reno

SUCH a complete account of our activities and program of cooperative sales promotion for the dealers on our system was carried in the last issue of ELECTRICAL WEST (Jan., 1936, p. 31) that there will be no need to amplify upon it here. We feel that the 1935 program was so particularly successful that we plan to follow precisely the same policy we pursued in 1935. In addition to the range, refrigerator and Better Light-Better Sight activities we hope to initiate a dealer cooperative campaign to stimulate air conditioning during 1936. Since some of the largest and most spectacular jobs of air conditioning in the West were installed here during the last year, we feel the time is ripe to follow up with a real campaign in such an activity this year.

Final results for dealer sales of appliances are now complete. It will be noted that the company sold a few ranges and water heaters, but these were only sold in remote districts in which there is no dealer outlet.

Ranges sold in 1935 by dealers totalled 687; by the company 8, making a total of 695. In 1936 we estimate the dealers will sell 495, and the company perhaps 5, making a total of about 500.

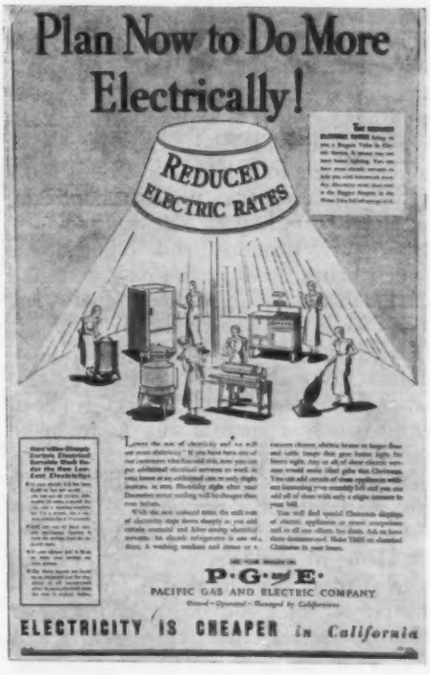
Water heaters we have not encouraged, and yet in spite of this, dealers sold 146 in 1935, and the company 7, a total of 153. In 1936 we estimate the dealers will sell 120, and the company perhaps another 5, a total of 125.

Refrigerators sold by dealers in 1935 numbered 857, and since the company sold none, this stands as the total. In 1936 we estimate the dealers will easily sell another 500.

We were particularly happy to have raised our average annual domestic consumption per customer over the 1,000 mark this last year with the help of the fine selling drive of the dealers. Our average domestic consumption now stands at 1,028 kw.-hr.

The 1935 commercial program was wholeheartedly a dealer cooperative plan. Dealer sales were stimulated through advertising allowances, wiring allowances for ranges displacing competitive fuels, direct bonuses on major electric appliances, and through the staging of dealer sponsored cooking schools.

Company advertising on the Better Light-Better Sight movement, with a full time man following the activity, brought about considerable interest, particularly among the commercial establishments. The company turned all equipment sales over to dealer outlets and through this dealer cooperative effort several exceptionally fine installations were made.


Plan Now to Do More Electrically!
REDUCED ELECTRIC RATES
P·G·&·E·
PACIFIC GAS AND ELECTRIC COMPANY
ELECTRICITY IS CHEAPER in California

Facsimile of a series of ads which told the story of what could be done with the cheaper electricity

●

Rate Reductions Will Mean Hard Work During 1936

By **R. E. FISHER**
Vice President in Charge of Public Relations and Sales, Pacific Gas and Electric Co., San Francisco

A NUMBER of sales campaigns, in cooperation with the dealers and the Electric Appliance Society, were conducted during the year. Among them was the electric refrigerator campaign in May, resulting in the sale of 5,421 refrigerators. It is interesting to note that the result of these campaigns does not end with the campaign. In the month following the refrigerator effort, 6,781 were sold; a greater number than were sold during the campaign.

Other campaigns in connection with the Electric Appliance Society resulted in the sales during the year (Dec. 1, 1934 to Nov. 30, 1935) by dealers of appliances not sold by company:

Washing machines	30,337
Radios	73,556
Ironing machines	9,348
Vacuum cleaners	21,880

The total value of these, from a dollar point of view, can readily be seen. The revenue to be derived from these and other appliances sold during the coming year, will offset, to a large extent, the loss in revenue to the company, which was occasioned by the "½ Off Plan" in operation during 1935.

		1936 quota
Electric ranges sold on PG&E system—1935	3,213	3,221
Electric water heaters sold on PG&E System—1935.	2,439	2,198
Electric refrigerators sold on PG&E system (Dec. 1, 1934, to Nov. 30, 1935)	38,754	
Kilowatt-hour consumption per domestic customer for 1935 was	744	....

The continued revival in the mining field has resulted in a large amount of additional horsepower being added to the company lines.

The reduction in rates, amounting to approximately $4,000,000 a year, which became effective Jan. 1, 1936, requires that intensive sales efforts shall be made during the year 1936 to recover the loss in revenue.

For the first three months an exten-

sive campaign in connection with the Electric Appliance Society will be conducted, taking final advantage of the F.H.A. Plan which expires at the end of March. Other campaigns will follow, and in all, a very busy and productive year is anticipated.

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Appliance Society Campaigns Built Dealer Volume

By B. W. REYNOLDS
Promotional Director, Electric Appliance Society of Northern California

THE Electric Appliance Society of Northern California enters its third year of operation with a record of achievement during its brief history seldom equalled by any cooperative group. While only two campaigns were held in 1935, these were both of such successful character, that coupled with the continuous work of the Educational Directors, the Society has firmly established itself as a definite and valuable builder of retail sales and a unique medium for the dissemination among dealers of modern merchandising methods.

The Society's immediate acceptance is no doubt due to the fact that it has filled a definite need in providing an impartial link between the distributors and retailers, making available the latest and best appliance selling methods, "with no axe to grind", and at the same time serving each distributor without favoritism.

The Society's two Educational Directors have spent the entire year on field promotion work with dealers. Between campaign periods this work has been devoted to conducting store promotions of various kinds, training demonstrators, giving sales talks before employee meetings and otherwise giving helpful assistance and ideas to dealers throughout the territory.

To those interested in statistics the following are a few brief facts of the between-campaign work of these Educational Directors. In 12 months they have traveled 15,610 miles; conducted 29 major shows; given training to 235 demonstrators and 181 salespeople; contacted approximately 700 appliance dealers at regular intervals; conducted 241 store meetings, and talked to countless thousands of prospective appliance buyers, as well as owners of various types of home appliances.

The importance of this work can scarcely be overestimated. Anyone who is familiar with conditions throughout the territory before the organization of the Society and the inauguration of the work of the Educational Directors, could not fail to see a remarkable change in the attitude of dealers generally insofar as the merchandising of electric appliances is concerned. Refrigerators, ironers, and other items which many times in the past occupied dark corners and collected dust week after week, have been brought to the front, occupying strategic store positions. The value of demonstrators and other modern selling methods have been emphasized in such a way as to make the dealers more and more conscious of the tremendous sales possibilities in electric appliances throughout the year.

Campaigns, of course, are really the backbone of the Society's activities and it is at these periods that the whole industry is lined up in a coordinated plan that sends sales totals soaring and brings a deluge of dollars to the dealers.

The first 1935 campaign of the Electric Appliance Society was held during the month of May on electric refrigerators. With the theme "An electric refrigerator costs you nothing. It pays for itself", the campaign went way beyond its goal of $675,000.00. Unit sales came to 5,227 refrigerators, an increase of 56% over the 1934 total of 3,350. In 1933, before the founding of the Society, only 2,233 refrigerators were sold during the same period.

A single insertion of this advertisement placed in 85 newspapers, resulted in dealer tie-in advertising and refrigerator publicity totaling 32,642 in.—the equivalent of 204 full newspaper pages

Included among the campaign participants this year were the distributors of Apex, Atwater-Kent, Crosley, Cyclops, Frigidaire, General Electric, Gibson, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Stewart-Warner, Westinghouse.

Campaign features included a 48-in. advertisement in 85 daily and weekly newspapers, this providing a nucleus for special pages of advertising and publicity, which the newspapers promoted among dealers selling the above makes of refrigerators. The concerted barrage of advertising played a vital part in putting the campaign over and the dealers in an amazing manner tied in with their own advertising.

Although it was impossible to measure exactly the amount of tie-in dealer advertising because of the many papers involved, the Society made an accurate check of 13 key newspapers, choosing the metropolitan papers with the greatest circulation and the highest advertising rates, for this purpose. In these newspapers the dealer refrigerator advertising during the month of May, totaled 11,145 inches, which indicated that the total amount of advertising during the campaign was phenomenal. This opinion was further justified by clippings from the 85 newspapers taken from the one issue of each paper in which the Society advertising appeared. A tally of this showed a total of 25,484 in. of advertising, with 7,158 in. of publicity, making a total of 32,642 in.—the equivalent of *204 full size newspaper pages*. This compares with a total of 30,297 in. in approximately the same number of newspapers in 1934.

Of great assistance in reaching this total was the Society's clip sheet which provided suitable editorial, news and picture material for the special pages and which served to stimulate the interest of dealers in tying in with the advertising program. This clip sheet was sent to some 750 dealers, as well as all newspapers, and free mats of illustrations were supplied to all requesting them.

One thousand striking display cards in 6 colors, 20″ x 30″ in size, with easel back, were supplied free of charge to all dealers in the territory. These were used extensively for floor and window displays.

The Society prepared a booklet entitled "Things Every Woman Wants to Know About an Electric Refrigerator",

which was distributed free at hostess programs and which contained recipes for frozen desserts, as well as general rules for preparing them and other helpful suggestions on the correct use of a refrigerator.

Through the cooperation of the Pacific Gas and Electric Co., hostess programs were held in 41 offices. Refrigerators on display were in actual operation, well stocked with foods, ice cream, etc., which was given away in sample form to those entering the offices. These hostess programs were held from 3 to 22 days during the month, the time depending on the size of the community.

Cooperative refrigerator displays were maintained in all of these offices during the entire month, and, in addition, displays were held in 23 P. G. and E. Co. offices not having hostess programs, making a total of 64 displays. These displays were limited, of course, to the makes of refrigerators participating in the campaign.

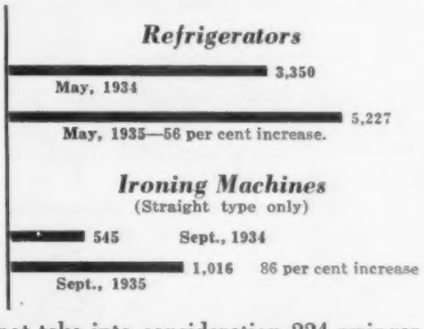
The second Society campaign was held during the month of September, featuring ironing machines. This campaign was confined exclusively to the cities of Berkeley, Burlingame, Chico, Grass Valley, Marysville, Oakland, Redwood City, Sacramento, Santa Rosa, Salinas, San Francisco, San Jose, San Mateo and Stockton. The campaign was featured by the giving away of free towels to all women who would take a demonstration and operate the ironer, and also by a dealer contest. Makes of ironers in the campaign were Apex, Easy, General Electric, Thor, Conlon, Ironrite, ABC, Meadows, Norge, Westinghouse, Prima, Horton.

As in the case of the refrigerator campaign, newspaper advertising, publicity, posters, educational field work and cooperative floor and window displays in P. G. and E. Co. offices were featured. The newspaper advertising was limited to the campaign towns and was all scheduled between Sept. 10 and 24. It was again impossible to find out exactly the total amount of ironer advertising during the campaign. However, the dealer tie-in advertising in the 24 newspapers on the schedule appearing on the day when the Society's ad ran, measured 8,657 in. with 2,248 in. of publicity, or a total of 10,905 in. of space. This was a tremendous showing in view of the fact that the campaign was on straight type ironers only and was limited to such an extent both as to time and territory, as can be seen by comparing it with the total advertising and publicity received during the month of September, 1934, when the campaign, devoted to both washing and ironing machines, conducted for the entire month and using more than 40 newspapers, resulted in a total of 12,701 in.

The free towel feature was most successful. Towels were supplied to dealers by ironer distributors at cost and 907 dozen were used. Many prospects were secured in this manner, and a definite impression as to the ease of ironing was made on all.

The dealer contest was also most successful as a sales stimulant. Cash prizes totaling $150.00 were awarded in four groups to the store in each group attaining the greatest quota of accomplishment in retail cash dollar volume sales of straight type ironers (wringer post type excluded) during the month of September. Each store's individual quota was based on its sales reported to the P. G. and E. Co. for the months of April, May and June. To arrive at the quota the sales for these months were added together and divided by three, thus giving the average. As a result of the contest, the following winners were selected on the basis of the greatest quota accomplishment: Group A, Sterling Furniture Co., San Francisco, 362.5 per cent quota accomplishment; Group B, Hale Brothers, San Francisco, 533.3 per cent quota accomplishment; Group C, Paul Morrison, Oakland, 960.38 per cent quota accomplishment; Group D, Farmers Union, San Jose, 1,200 per cent quota accomplishment.

The campaign resulted in the sale of 1,016 straight type ironers (this does not take into consideration 224 wringer post type ironers which were sold during September) as compared to 545 sold in 1934, or an increase of 86 per cent, a fact that seems to guarantee a bigger and better ironing machine campaign for 1936.



As a typical "firing line" incident, many of which occur in every Society campaign, is the experience of one dealer whose monthly average prior to last September, was 2 ironers. During the campaign he tied-in with advertising and employed a demonstrator who had received training from one of the Society's Educational Directors. The dealer sold 12 ironers and was so encouraged that he kept up his promotional work the following month, with both the demonstrator and special ironer advertising and sold 21 ironers. Most enthusiastic by this time, the dealer continued his efforts along the same lines and at the end of the month his records showed he had sold 29 ironers.

What one dealer accomplished, all dealers can do and the Society hopes during the New Year to continue its campaign and educational work to prove the enormous profit possibilities in electrical appliances.

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Dealers' Sales Topped All Previous Records

By **H. H. COURTRIGHT**

President, Valley Electrical Supply Co., Fresno, (Merchandising Division of San Joaquin Power)

THROUGHOUT the United States, reports indicate that business in general has definitely improved. In California and particularly in the territory served by San Joaquin Power and Midland Counties that statement is borne out in fact even more impressively than in many other parts of the country.

An analysis of the sales reports of the electric dealers in our territory, and the statements of the manufacturers and jobbers serving them, shows 1935 to be the banner year since 1929. In support of the "50% Discount Offer" and to promote the sale of electrical appliances and equipment through dealer outlets, a three months campaign was launched in the early part of 1935. The campaign was designed to stimulate the sale of all electrical appliances, including both heavy duty equipment and small appliances, but particular emphasis was given to the refrigerator. Electrical expositions were held in Fresno and Bakersfield during the closing days of the campaign.

Throughout the entire year we carried on an intensive dealer cooperative activity. The dealers realize that the San Joaquin Power has played no small part in helping them to take advantage of improved conditions through increased sales. They realize the vast advertising program, sponsored by the company, in the interests of the dealer, to promote the various inducement offers placed them in an advantageous position to make more sales.

The results of our 1935 merchandising and load building program have been especially gratifying. The prospects for 1936 are even brighter. Even though we face a presidential election, there are many indications which point to a continuance of good times for the dealer in electrical appliances. More money for agricultural products, increased building activity promoted by F.H.A. and an aggressive power company sales program plus a more confident attitude on the part of the dealer and consumer, all should have a mate-

rial effect in keeping the sales curve on the upward trend.

Following is the report on 1935 range, water heater and refrigerator sales together with the quotas for 1936:

	1935 Actual	*1936 Quota*
Ranges	1,481	1,750
Water heaters	738	850
Refrigerators	7,807	7,500

The inducement offers—"Free Electricity", "New Lower Rate", and "50% Discount"—have most effectively brought the customer to a closer realization of the advantages of electricity. These offers have also accustomed the consumer to a greater use of electricity. Thus, the market for heavy duty domestic equipment—ranges, water heaters, and air heaters — has been enlarged. Better times and increased building activity have also served to enlarge the list of prospects.

The rural consumers are the logical prospects for heavy duty domestic equipment. They offer the greatest per capita use and are least likely to be induced to replace electricity with a competitive fuel.

Several factors have tended to narrow this domestic market, namely, the lost sales leverage due to the granting of the cooking and heating rate to all domestic consumers; the advent of natural gas into the Fig Gardens north of Fresno; the aggressive competition of the companies selling Butane; and the discontinuance of the "50% Discount" offer.

Nevertheless, with all these factors taken into consideration, we estimate that more kilowatts in heavy duty domestic appliances will be sold in 1936 than in 1935.

In setting up our quota on heavy duty appliances for 1936, we have done so recognizing the handicaps under which it must be accomplished and realizing that greater man power would be needed to reach our goal. Even though general business conditions seem to be on the upgrade and should continue so during 1936, we have lost a real sales leverage by the fact that all domestic lighting consumers have been placed on the cooking and heating schedule. As in the past, the range salesmen will be responsible for the sale of all heavy duty domestic appliances in their respective territories. All sales, however, will be passed on to the dealer of the customer's choice. In the event the customer has no preference, the sales will be given to dealers in rotation.

From our sales activity, we estimate that 20,550 kw. in heavy duty equipment will be added to the power company lines. This additional load will bring an estimated annual return to the power company of $136,658. The dealers will divide a total sales volume including merchandise and wiring of $374,750.

Many new and enlarged features have been added to our dealer cooperative activity, so many in fact that they will be reported in a separate article next month in these columns. Suffice to say that as a result of this dealer-cooperative activity, we estimate that 31,633 kw. in lamp socket appliances will be sold, bringing an estimated revenue of $158,165 to the power company. To the dealers will go an estimated sales volume of $2,716,700.

The combined results of the dealer-cooperative merchandising and load building program for 1936 on heavy duty and lamp socket appliances shows an estimated load of 52,183 kw. will be added to our lines, bringing a return of $294,823. The dealers' volume on this anticipated business represents $3,091,450.

It is interesting to note the average annual kilowatt hour consumption per domestic consumer increased during 1935 from 972 to 1,020. Following is the average use since 1930:

1930	1931	1932	1933	1934	1935
916	942	947	912	972	1,020

This is the first year in which the average has exceeded 1,000 kilowatt hours.

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No Place for "Peddlers", Need Creative Salesmen

By **E. G. STAHL**
Sales Manager, San Joaquin Light and Power Corp.

WITH a revenue quota for new business sales amounting to $1,385,000, the actual quota accomplishment for 1935 was $1,592,000.

Kilowatt-hour sales in all major classifications of service, except irrigation pumping (which was affected by the highest precipitation of record), showed outstanding increases. For the first time, kilowatt hour sales per residential customer exceeded 1000 kw.-hr., averaging 1,020 kw.-hr. per customer for the year.

During the year, some outstanding results were secured in oilfield electrification; 3,600 hp. in major pipe line transportation equipment was installed in the face of strong Diesel and steam competition. These installations will operate at a high load factor. Many gas engines for pumping and other oilfield purposes have been replaced with electric power.

Practically all agricultural pumping plants sealed during the depression period have been reconnected and many new plants installed during the year.

The home lighting activity has been continued with five saleswomen in the field; 2,614 customers received recommendations, which have resulted in an average increase in connected load of 321 watts per recommendation.

Three commercial lighting salesmen sold approximately 1000 kw. with an estimated annual revenue of $32,000. Of outstanding interest in this work were two school jobs involving the illumination of approximately two hundred classrooms which are being equipped with six 500-watt indirect units per room.

Air conditioning sales for the year increased 300 per cent over 1934, with many fine prospects for this year.

The following tabulation shows kilowatt sales for 1935 and quotas for 1936, by classifications:

Classification	*1935 Sales kw.*	*1936 Quota kw.*
LIGHTING		
Domestic	6,189	5,478
Commercial, industrial and street lighting	3,837	4,620
Lamp socket appliances	16,137	14,620
Total	26,163	24,718
COOKING and HEATING		
Domestic	19,097	20,215
Commercial	1,043	2,715
Total	20,140	22,930
POWER		
Industrial	9,288	9,202
Oilfield	11,335	7,360
Agriculture	12,764	12,790
Grand Total	79,690	75,000

One of the features of our 1936 business development program is our agricultural sales plan. Eighteen field salesmen have been given special engineering training, with these objectives:

(1) Correct size of installation.
(2) Higher efficiency of operation.
(3) Increased hours of use.

Each salesman has been assigned monthly quota of *increased plant hours of use* and, in addition to new installations, is required to make twenty layouts each month for existing customers. A somewhat similar plan is outlined for industrial and oilfield sales activities.

In air conditioning sales, we have assumed the responsibility of providing engineering layouts for customer installations, relieving the dealers of this responsibility and placing dealers on an equal basis regarding capacities when bidding for a job.

Lighting sales, both domestic and commercial, will be given greater attention than in the past.

The nature and the requirements of utility sales promotion today has left no place for the "peddler" type of salesman who has been replaced by the highly trained sales engineer.

A lessening of competitive sales pressure will make possible more creative sales work during the year.

1936 will, undoubtedly, bring to the utilities many political problems, but in spite of these and with our sales activities directed to a greater extent than ever before toward the efficient use of customer's equipment, the year will bring a definite improvement in customer attitude and our greatest kilowatt and kilowatt-hour sales.

ELECTRICAL WEST COOPERATIVE

SALES APPLIANCE ★ GUIDE

FEBRUARY, 1936

.... Copyright, 1936, by Electrical West, 883 Mission St., San Francisco

To Make Money by Selling Washers, Ironers

Check Your Selling Against These Hints—Overlook No Tips

Commissions and margins are substantially better on washing machines and ironers than on most appliances. Acceptance for the washer is almost universal, meaning less sales resistance, and easier sales. The ironer is rapidly gaining the same acceptance, and every washer buyer is a prospect. This means that the salesman can always use washers and ironers as a bread and butter sales leader for other appliances. To the dealer it means good volume at less effort, and profit in more rapid turnover.

Three markets are open to the washing machine and ironer salesman or dealer.

New Prospects include—brides starting housekeeping, new residents of town who have no washers, those who have never bought a washer and often do not realize the need for one, and those who are reduced in circumstances and want to do their own washing to save money. The way to uncover such prospects includes watching marriage license and birth notices, which can be followed up by a letter and literature; cold canvas; tips from former customers who should be cultivated persistently; and follow up on floor demonstrations. Many dealers use telephone solicitation effectively.

Replacements of worn out or old time washers with new, provide a fine field for profitable selling. This means a personal follow-up of old customers, always a wise thing to do, for it often uncovers the need for other appliances.

Washer owners are all of them prospects for an ironer to complete their home laundry and bring fullest satisfaction from both washer and ironer. Canvas all your old customers personally and by mail.

Even Wet Wash customers can use an ironer, even if they prefer to send the laundry out. The ironer does the hardest part of any laundry task.

Put Yourself in the Prospect's Place and see your machines from her viewpoint. Ask yourself the questions *she* would want to know. Make your approach, your sales talk, your close, in a way you know would not offend you were you the prospect. By getting around *on her side of the picture*, you will sell effectively.

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Demonstrate—

It's the way to—Attract Prospects,
—Interest them, and
—Sell With Satisfaction

TWENTY years of experience prove that there is no better way to sell washers and ironers than a careful, well executed demonstration. So, to sell washers profitably, demonstrate!

Prepare yourself by (1) being coached by an expert demonstrator, (2) or thoroughly reading the plan and schedule prepared by the manufacturer of your washer and ironer, (3) or working out a thorough routine of your own. Rehearse it, practice it, until perfect.

Prepare your machine, see that it operates perfectly, smoothly, is easy to set up and start operating, that no little detail throws you off your track. Be a good showman.

Some demonstration ideas:

Three-way—an ironer demonstrated in the window, accompanied by another demonstrator who changes cards on an easel that tells the sales features. A salesman outside on the sidewalk invites those who stop and watch to come inside and try ironing.

Without Window—Several variations of this plan have been used. One store has had the glass moved back, leaving the window platform for demonstration. Demonstrator can talk to those who watch. Another store has a special window which can be raised, leaving front open. Good old standby is the demonstration in the entrance way.

Child Can Run It—Many novel and attention getting demonstration stunts have been used along this line. One store used a little colored girl, a piccaninny. Another used a group of children.

SALES TALKS THAT

CASE HISTORY NO. 14 ★ ★ ★ SELLING A HOME LAUNDRY

THE successful business man is always on the alert for ways to add a little extra profit to his operations—for ideas that will make sales produce the greatest dollar volume of new business. The ensemble selling of groups of appliances is such an idea. Bill reasons that, if table appliances can be sold in sets, then the appliances necessary for a complete electric kitchen or the home laundry also can be sold in groups. It takes little, if any longer to sell a group of appliances than it does to sell each appliance individually. Hence the time Bill spends in selling becomes more productive by trying to sell more than one appliance at the same time.

To secure the best results of group selling of appliances, prospects should be carefully selected to determine their need for the appliances, their purchasing power, etc. This month Bill will demonstrate his ideas on the selling of a home laundry. His bogey is fifteen interviews with selected prospects.

Successful selling depends upon careful planning and good showmanship. On the sales floor Bill has arranged a display of various models of washers and ironers and he has employed a competent demonstrator to assist him. A Mrs. Brown has just entered the store in response to a telephone interview.

BILL: "Good afternoon, Mrs. Brown. Thank you for coming in. As I told you when I phoned, our new modern laundry equipment can make your housekeeping more enjoyable and lessen the amount of work and attention that you must devote to home laundering. It will really save your money and clothing. When you see for yourself how easily and economically it banishes the drudgery of washing and ironing, I'm sure you will be glad you came. If you will kindly step this way our demonstrator will show you how electricity can eliminate the laundry problem in your home. *(Bill introduces Mrs. Brown to the demonstrator who explains the actions of a washing machine which is in actual operation.)*

BILL: "Actually the only labor involved in this operation is the placing of the clothes in the machine and later through the wringer and into the rinse water. No scrubbing or wringing, yet you get an abundant supply of clean clothes with one-tenth the time and labor necessary to wash them by hand. Ironing is just as easy too. Watch how quickly our demonstrator irons this house dress. Pleats, ruffles and frills come out beautifully too. With a little practice they can be done as though by the most experienced hand laundress. But most of the family washing consists of flat pieces, and what a difference to be able to iron these while seated, thus eliminating the tiresome strain, backache and the drudgery of long hours of standing over a hot iron. Won't you sit down and try ironing this hand towel and find out for yourself how simple, easy and pleasant ironing can become?"

MRS. BROWN: "I've often watched it done but I have never tried it myself. *(She sits down and the demonstrator explains the control and other points about the operation of the machine).* It *is* easy, isn't it?"

BILL: "It's the easy modern and thrifty way of providing an abundance of clean, fine-finished clothes for the family. Easy because these two appliances reduce to a minimum the labor of washing and ironing; thrifty because it saves laundry bills and because it enables you to take personal care of your clothes so that they last longer and also because the ability to launder them more frequently saves your investment in clothes. That's a very important saving if there are small children in the family."

Sold APPLIANCES

MRS. BROWN: "I should say so, but what bothers me is where to put all this equipment, we have so little room."

BILL: "It is unfortunate that homes are built with so little room for the real needs for modern electrical equipment, isn't it? Yet it's surprising how adaptable these appliances are. May I show you some of the plans and sketches of how to convert spare space on your porch or in your basement into a modern laundry room? These ideas were clipped from recent home magazines which have been devoting a great deal of space to the subject. Perhaps you may see some possibilities in your own home arrangement from these."

BILL has found that a scrap book of clippings on the layouts and equipment for the home laundry is a helpful sales tool that stimulates the prospect's imagination as to how she too can adapt home laundry equipment to her home. Magazine articles on the subject also prove that the ideas are up-to-date and modern. They help to stimulate a desire to have such laundry rooms or to approach them, if possible. So Bill goes over the scrap book and points out the various suggestions.

BILL: "Wouldn't a room like one of these save your time and your energy, though? See, so few steps to take, everything so convenient and thoughtfully arranged."

MRS. BROWN: "It certainly would be nice to have, but my stationary tubs are down in the basement and I am sure that Mr. Brown would not want to go to the expense of making a special room down there, at least not yet. And it would not be practical to do ironing down there unless there was a separate room, either."

BILL: "I can appreciate that, and yet it really isn't necessary to have a separate room for your modern home laundry. You can place the washing machine in the basement near your stationary tubs. The ironer can be placed upstairs in any convenient location such as the kitchen or sewing room. Sometime in the future, if you want to ensemble them into a complete laundry you have all the essentials to do so. But meanwhile you can still save clothes, money and fatigue and enjoy lots of clean clothes with just the laundry equipment itself.

MRS. BROWN: "I'm afraid there is no place that I could put an ironer without its being in the way."

BILL might accept this as a stumbling block, as many salesmen are tempted to do, and be satisfied to sell only a washer, but he is ingenious and quickly adapts his sales story to the situation.

BILL: "I agree with you that it would be in the way if the manufacturers hadn't developed a table top model like this one which is a handy addition to the furnishings of any kitchen or sewing room. When it is not in use this table top makes it a handy, convenient piece of kitchen equipment. When you need it to do ironing it can be rolled easily to any place that is convenient for you to sit down and do your ironing."

MRS. BROWN: "That's an idea, of course, but——"

BILL: "Now, Mrs. Brown, you can't really appreciate how helpful these modern electrical servants are until you have tried them. You can modernize your home, and begin to enjoy these convenient, thrifty, leisure-making home laundry appliances immediately because any of these models you may select can be placed in your home upon small, convenient budget terms. The economies that you will realize from their use should more than take care of the payments."

MRS. BROWN: "Well, I would like to have them but I am not sure that we can afford the money right at this time."

BILL: *(smiling)* "I can't blame you for having been a bit dubious when I said that these new electrical servants pay for themselves. It does sound almost too good to be true, doesn't it? However, I think I can demonstrate to your satisfaction that they not only will do this but at the same time will relieve you of the burden of washing and give you time to enjoy more leisure."

HERE Bill, by questioning her on her present laundry expenses, the amount of time she spends washing and ironing and other factors pertaining to her household, evaluates the electric home laundry service in terms of dollars and cents and in leisure time and is able to show Mrs. Brown that when she considers all the tangible and intangible economies that the washer and ironer have made possible, home laundry equipment is a most profitable investment.

MRS. BROWN: "I hadn't thought of it in just that way before. It's surprising when you take all of these things into consideration to find how many ways savings for the family can be made. I am very glad that you have explained it so thoroughly to me."

BILL: "It's part of my business, you know to make sure that the customers of this store thoroughly understand the convenience, economy and pleasure that electrical appliances make possible in the modern home. Now I can send you this washer and ironer, let's see, tomorrow afternoon, so that you'll have them before your next wash day. Why not begin right away to save and to enjoy the advantages of a home laundry? It will be a treat to start the week off with a sunny Monday instead of the old blue Monday, won't it? We'll send someone out to see how you get along with your first washing."

MRS. BROWN: "Very well. It will be a relief, I know."

BILL'S sales talk illustrated one very important point in successful selling. Most customers do not buy because they have not been made fully acquainted with all of the advantages of the product they are asked to buy. When they are shown, as Bill has shown Mrs. Brown, the economies and advantages they will enjoy, they are generally grateful and become firm friends of the establishment. Those of us who sell electrical appliances are most fortunate in having a wealth of benefits to explain while we are selling. Successful salesmen do not overlook a single one.

CALIFORNIA OREGON POWER CO. • PORTLAND GENERAL ELECTRIC CO.
MOUNTAIN STATES POWER CO. • PUGET SOUND POWER & LIGHT CO.
PACIFIC POWER & LIGHT CO. • IDAHO POWER CO.
NORTHWESTERN ELECTRIC CO. • WASHINGTON WATER POWER CO.
UTAH POWER & LIGHT CO.

Convert---

the Mechanical Features into These Blessings

SELLING is based on satisfying real human needs. These are the basic needs which prompt a woman to buy laundry equipment. Stress them first, and only then back them up with the mechanical features which make these "blessings" possible. Use the manufacturers reputation to guarantee your statements, and then *ask for the order.*

●

Plenty of Clean Clothes—

Can have clean laundry whenever needed or wanted, without respect to set laundry pickup and delivery days. Especially important in a growing family, where children soil clothes quickly. Can wash as often as required.

Less Investment in Clothes—

A vital sales point, because by washing oftener the same childrens' clothes can be used oftener. Two pairs of coveralls may do for Johnnie instead of six, where laundry must be waited for. Less clothing outgrown by children where a smaller supply of clothing is required and used oftener.

Clothes Last Longer—

Washing with pure water and soap only, better home care saves the wear on clothes. Any particular weak spots can be favored so as to prevent tearing or damage.

Particular Care on Special Things—

Every woman has lingerie, or colored wearing apparel that she will not trust to the laundry, and does herself. She can do this laundering too, and much more easily, with electric home laundry equipment.

Saving in Money—

Besides the savings in wear on clothes and the investment in clothes, there is a definite saving in laundry cost. (A wise salesman will assemble figures to prove this point. Most manufacturers have such data.)

Relief from Backbreak—

No task makes a woman *feel* older than washing by hand. An electric washer and ironer take the backbreak out of washday by doing the heavy jobs with a little motor.

Saving in Time—

An all day job becomes a matter of two or three hours. The whole day need not be devoted to washing alone, with a tired relapse afterward. Washday can also include other activities, since her *time* and *energy* will have been conserved.

Guards Against Unsanitary Conditions—

Where all clothes of all people are thrown in together, many fastidious housewives fear that contagion will be carried in laundry, especially where, for economy's sake, oriental laundries are patronized. Home laundry protects a family both from other folks' contagion, and others from the family's own colds or measles, etc.

Prevents Loss of Treasured Articles—

Home laundry never goes out, so never gets lost or stolen.

Pride in Being Modern—

Up-to-date homes, shown in all the women's magazines, have home laundries. A purchaser can take real pride in her modern electric home laundry equipment.

(See the complete, ELECTRICAL WEST APPLIANCE SALES GUIDE, *October, 1935 issue, for further owner advantages respecting each type of washer, ironer, electric iron, clothes dryer, water heater, hotplates, and other electrical accessories to a fully equipped home laundry).*

●

When You Advertise—

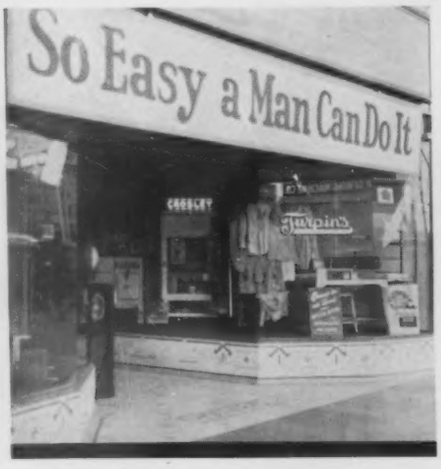
Make use of some of the thoughts or ideas above in your ads. Your manufacturer's features will be given added meaning if you tell the prospect what they mean to her. Gadgets, or special features of design in themselves may interest *you*, yet mean little by themselves to your prospect. Show her how she will be served by the feature gadget—don't take it for granted that she will know without your mentioning it. Even if she knows it, there is added emphasis to assuring her of it.

Stock on Hand—

Have enough stock to make a varied display. Some folks prefer one type of machine to another. Some will want the wringerless, others the wringer type. Some have so little space that a tray washer would be the only thing you could sell. The same goes for ironers. Stock a variety so that, like Bill Smith did in the sales talk inside this Guide, you can meet the situation where space is limited.

Accessories—

Many profitable accessories can be handled to make your store a headquarters for home laundering—such as soap powders, clothes pins, lines, drying racks, ironing boards and covers, electric hand irons, clothes baskets, hampers, emptying devices, in fact any accessory that makes home laundering easier and more cheerful. By keeping your customers coming back to your store you contact them for names of friends who may be prospects, sell them other appliances from time to time, keep them *your* customers by your thoughtful service. Thus a clientele is built up, a business made profitable, and proof against competition.



Keep these Sales Guides where you can use them frequently, in a folder or binder. One appears in ELECTRICAL WEST *each month. Next month the Guide will present ideas and methods for successful and profitable range selling.*

Appliance Show Feature of Furniture Mart

WESTERN Radio and Appliance Show was one of the four "great home furnishing markets of the West" featured at the Western Furniture Exchange Market Week, Feb. 3-8, 1936. Central feature in the radio and appliance field was a trade dinner held Feb. 5 at the Palace Hotel addressed by several outstanding speakers.

Among the speakers scheduled for this special dinner was Howard E. Blood, president, the Norge Corp., Detroit, Mich. He talked on the subject "Looking Forward to 1936." Dr. G. W. Allison, field director, Edison Electric Institute, likewise was a guest speaker, with the subject "That Kitchen Modernizing Campaign." L. A. Clark, advertising and sales promotion manager, household division, Frigidaire Corp., of Dayton, Ohio, also spoke on the subject, "Promoting the Sale of Electric Refrigerators." Lew F. Galbraith, division sales manager, East Bay Division, Pacific Gas and Electric Co., Oakland, spoke on "Selling More Gas Appliances."

Chairman of the dinner was H. R. Basford, vice-president, Western Furniture Exchange and prominent distributor of electrical and gas appliances. Arthur E. Rowe, managing director, Pacific Radio Institute, was toastmaster.

An entertainment program of radio stars was arranged for by Arnold Maguire, continuity editor of Station KFRC.

Aside from the special radio and appliance dinner Dr. Allison was also to speak at the Thursday noon luncheon at the Palace Hotel. The subject at that meeting was scheduled to be "Setting the Pace in Merchandising Home Furnishings."

Exhibitors at the Western Furniture Exchange displaying new appliances for 1936 included Allied Manufacturers, Inc., Apex-Rotarex Manufacturing Co., of Oakland; H. R. Basford Co.; Bushnell Sales Co.; Chanslor & Lyon Stores, Inc.; Easy Washing Machine Corp.; Frigidaire Corp.; General Electric Supply Corp.; Albert Groeschel; Holland-Rieger, Inc.; Leo J. Meyberg Co., Inc.; Moore Electric Supply Co.; Steiger & Kerr Stove & Foundry Co.; Stromberg-Carlson Telephone Manufacturing Co.; Thompson & Holmes, Ltd. and A. D. Wunder Co. The exhibits provided under one roof in the Exchange building one of the most comprehensive and diversified displays of radios, gas and electric appliances available in the West.

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Pasadena Organizes Branch of League

Pasadena has joined the Electrical League of Southern California with a branch organization to be known as the Pasadena Electrical League. Its purpose will be to coordinate all branches of the electrical industry and to publicize the advantages of complete electrification of homes and industries in Pasadena.

Harvey Hincks, Jr., of the city's light and power department, is president. Arthur Rowley, of Rowley Electric Co., is vice-president and H. J. Troff, of Cook-Nichols Co., is secretary-treasurer. The league meets the third Thursday of each month at 7:30 p.m. in the club rooms of the City Light Department. Speakers and features of an electrical nature are secured for the meetings.

DEALER SALES REPORTS—DECEMBER 1935 — TOTALS FOR YEAR 1935

A Summary of the Dealer Reports Compiled by Associations, Societies, or Bureaus, or Dealer Contact Departments of Utilities

APPLIANCE	P. G. & E. Co.[1]		San Diego Cons. G. & E. Co.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co., Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	Dec. 1935	Totals 1935	*Dec. 1935	*Totals 1935	Dec. 1935	Totals 1935	Dec. 1935	Totals 1935	Dec. 1935	Totals 1935	Dec. 1935	*Totals 1935	Dec. 1935	Totals 1935
Ranges	307	3,213	.....	.....	124	1,579	483	5,645	208	1,977	26	1,278	182	2,731
Water Heaters	248	2,439	.....	.....	55	786	194	2,973	33	446	5	1,242	.....	.....
Air Heaters—aux.	2,358	7,834	.....	.....	130	445	686	2,328	.....	.....	211	1,168	150	552
Air Heaters, 220	102	857	.....	.....	112	794	.....	.....	.....	.....	.....	.....	.....	.....
Refrigerators	1,818	37,616	.....	.....	212	6,101	1,894	35,523	302	7,545	234	5,965	179	5,719
Dishwashers	37	130	.....	.....	1	27	.....	.....	9	16	.....	.....	.....	2
Washers	2,664	30,337	.....	.....	363	4,436	2,778	30,410	860	9,278	379	4,999	393	4,770
Ironers	770	9,348	.....	.....	92	837	756	5,499	73	462	75	680	72	507
Vac. Cleaners	1,973	21,880	.....	.....	125	1,107	1,302	11,063	669	5,123	160	2,496	170	978
Radios	9,574	73,556	.....	.....	1,045	6,766	7,558	51,408	2,592	12,716	1,613	8,133	1,195	4,985
Mixers	935	6,551	.....	.....	588	1,364	2,785	7,145	905	3,304	854	1,406	551	1,193
Cookers, Casseroles	.....	.....	.....	.....	101	320	241	814	47	388	637	14,608‡	33	683
Irons	.....	.....	.....	.....	784	4,970	3,616	18,496	1,853	12,182	839	6,680	682	4,478
Waffle Irons	.....	.....	.....	.....	801	2,108	3,000	7,738	1,425	4,221	892	.....	743	1,774
Toasters	.....	.....	.....	.....	835	2,422	3,239	9,789	1,533	6,695	1,386	.....	748	2,240
Table Stoves, etc.	.....	.....	.....	.....	691	2,358	1,081	4,347	1,840	8,896	.....	146	600	2,310
Heating Pads	.....	.....	.....	.....	.....	.....	1,049	3,177	468	2,450	360	.....	245	650
Curling Irons	.....	.....	.....	.....	.....	.....	183	928	337	2,896	.....	.....	.....	.....
Coffee Makers	.....	.....	.....	.....	521	1,734	1,411	5,374	875	3,588	1,298	.....	522	1,913
Sewing Machines	1,119	13,066	.....	.....	.....	.....	.....	.....	.....	.....	46	.....	.....	.....
Clocks	.....	.....	.....	.....	517	1,650	1,781	6,068	691	3,299	672	4,319#	232	741
Fans	.....	.....	.....	.....	.....	.....	21	2,886	31	2,125	4	1,156	69	972
Floor Polishers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sun Lamps	.....	.....	.....	.....	11	39	57	332	27	85	5	1,604	15	155
Reflector Lamps	.....	.....	.....	.....	428	1,545	.....	.....	3,040	11,845	1,261	5,362	960	3,275
Misc. Lamps	.....	.....	.....	.....	.....	.....	.....	.....	2,560	13,687	1,719	15,742	1,886	7,949
Yard Lights	.....	.....	.....	.....	63	678	.....	.....	.....	.....	.....	.....	.....	.....
Misc. Small Appl.	.....	.....	.....	.....	834	3,315	1,832	16,969	83	272	.....	.....	.....	.....
Total Dealers	1,400	1,400	.....	.....	.....	.....	567	567	.....	.....	.....	.....	.....	.....
No. Reporting	.....	.....	.....	.....	137	140†	517	502†	.....	.....	.....	.....	.....	.....

‡ Includes (besides Cookers, Casseroles) Toasters, Table Stoves, etc. # Includes sewing machines.

* Reports not available at time of going to press.

* Totals for the first 11 months of 1935.

† Arithmetical average number of dealers reporting since first of the year.

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. First report of year 1935 starts with Dec., 1934, and will be cumulative from that month.

[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Clocks, fans included under miscellaneous.

[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.

[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served. Comparative figures of same month last year indicates improvement.

[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory. Dollar value of appliance sales in June, 1935, is over 300,000 ahead of sales in June, 1934.

[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.

[7] Figures compiled by Electrical Equipment Sales Association. Include power company sales and sales of all reporting dealers—about 60% report.

EDITORIAL + + +

What This Issue Means

THERE is meat for everyone in the industry in the pages of this "Progress and Planning" number of ELECTRICAL WEST. Business relies upon figures to measure progress and to lay plans for the future. Accomplishment then becomes a matter of inspiration plus hard work. The many articles on the forty-odd pages of this issue were compiled with these purposes in mind. Statistical analyses of the basic industry barometers show the past growth and at the same time give some measure of the future potential. Industry leaders, in gaging the opportunities ahead for the various branches, provide inspiration. Sales plans of all of the utilities for the year show how the industry will tie together its many branches in a consolidated sales drive. From a review of the major developments in apparatus and equipment engineers and contractors will find new trends and new applications to be used profitably. This issue is not the work of ELECTRICAL WEST'S staff; it represents opinions, ideas and contributions from scores of people in the industry. For their help we are sincerely grateful. To them and to the men and women in the industry who see the opportunities which lie ahead, we dedicate this work.

Business vs. Politics

BUSINESS, having borne about as much punitive legislation as it can stand, staggering under a back-breaking burden of taxation and anticipating an even greater load, is thinking in terms of politics. Business has been aroused by the knowledge that the very principles on which it operates are at stake. So it lays plans for action.

So far there have been few recorded successes for the side of business in its competition with the politicians. Perhaps it is because business aimed at the politicians themselves and not at the politicians' master, the public. When it did approach the public in the past, it tried to use logic and cold intellectual appeals. And the politicians laughed and won. In its new campaign business might well remember a succinct statement by Bruce Barton. He has said that "nobody loves a comptroller; history records no instance of great masses of men and women laying down their lives for an auditor." So when business decries government expenses, talks of high taxes and bureaucracy, it is wasting its ammunition unless these appeals are made in terms that will influence the heart and emotions as well as the intellect. The politician knows this well. He makes people believe in him and his promises by talking of their welfare, their homes, their firesides, their happiness and that of their children.

Business has done and can continue to do more for the happiness, welfare and future security of the American public than can politics. Its ability is demonstrated every day. To translate this into language that will influence public opinion and public goodwill is the problem. It can be done by using the weapon of the politicians—an appeal to the emotions as well as to the mind.

Remove the Shackles

NOTEWORTHY has been the record of the light and power industry in its progress toward recovery and in its contributions to the general prosperity of the country during the past two years. Yet the statement can be made without fear of contradiction that this progress is but a fraction of the industry's full possibilities toward contributing to the national welfare. Removal of the clouds of doubt and uncertainty caused by the threat of government invasion and unprovoked attack would loose a flood of business estimated in the aggregate to exceed three billion dollars.

How can these definite benefits be secured? Wendell L. Willkie, president of Commonwealth & Southern Corp., says that the answer lies in a sober, moderate and sound solution of the so-called "public utility problem"—a solution which will remove the vicious utility holding company death sentence and preclude further laboratory experimentation on the utilities. Congress can accomplish it through amendment to the present utility bill or by introducing and passing a new bill. Says Mr. Willkie:

"Such a bill should make the issuance of all utility holding company securities subject to the approval of the SEC and empower it to prohibit the issue and sale of securities found to be detrimental to the interests of the investing or consuming public; require all utility holding companies which do not have their securities listed on a registered stock exchange to register with the SEC, thus making them subject to all of the provisions of the present Securities Exchange Act; regulate the relationship between public utility holding company and any affiliate so as to prohibit upstream loans, excess profits from service, engineering or financing charges and any and all other abuses

alleged against utility companies during the boom era; authorize the SEC to prescribe uniform systems of accounts for holding companies; provide for the creation of interstate power boards to pass upon interstate power rates whenever requested by one of the state public service commissions concerned or by a party to a contract prescribing such rates."

If such a law would speed the industry's career of public service and expansion and restore its ability to bring new forces to bear in the drive for economic recovery, then common sense would seem to dictate its immediate passage. The tide of recovery is flowing inward; political, economic and public responsibility for its continuation rests on the country's legislators.

$$$ in Power Factor

PEAK demands on both distribution feeders and plant distribution circuits have focused attention upon the problem of power factor. On the distribution system, load growth in many sections of the West makes the full utilization of existing conductors imperative. Manufacturing plants, many of which are enjoying peak production schedules again, find need for additional capacity for new equipment and machinery.

From the dollars and cents viewpoint, low power factor is a needless waste. Conductors which are carrying excessive reactive currents are not utilized efficiently. If, by raising the power factor of the plant or circuit, this reactive current can be eliminated, the conductor capacity thus released for "pay loads" becomes a most economical means of increasing the capacity of the system.

As a typical example of the economy of power factor improvement, a manufacturing plant wanted to increase its load by approximately 20 per cent to take care of new machinery. Plant feeders, however, were carrying above their rated amount of current at a relatively low power factor. By making a modest investment in corrective apparatus, the existing feeder capacity was able to handle the new load and the transformer bank serving the plant was relieved sufficient reactive kva. to absorb the new load without overheating. Thus correcting the power factor produced the same result as if the conductors and transformers of the plant were increased in size by 20 per cent. Capacity thus made available is the cheapest possible way in which to prepare to meet the demands of new load. Similarly, many utility companies have adopted pole-top capacitors to improve the voltage and load-carrying capacity of their distribution systems. It is a sure way of utilizing the existing investment more economically.

Unfortunately, the plant operator is not an electrical engineer and unless someone in the industry points out the benefits of high power factor to him, he is likely to accept conditions on his plant distribution system as he finds them. Most utilities offer a bonus in their rate schedules for high plant power factor. Merely offering the bonus ordinarily will not result in much improvement on the distribution system. The idea has to be sold to the plant operator not only on the basis of obtaining a lower overall cost of energy but also on the increased load-carrying ability of his own electrical system.

The manufacturers of power factor corrective apparatus have been doing fine missionary work in selling capacitors and synchronous motors but power factor correction is a problem that merits even greater attention. Perhaps the utility power salesman should sit at the desk of the distribution engineer and learn more of the problems incident to low power factor and the savings in investment possible by its improvement.

Over the Thousand

MOST reliable index of returning prosperity is the use of electricity in the homes of the West. And best index of that use is the table on page 47, which lists the average kilowatt-hour consumption per domestic customer for the utilities of the West. Indeed the figures, which include those of the past six years, show both the recession from the high average use of a few years ago, and the gradual return to high average use during the last two strenuous years.

It is a wholesome sign to see so many companies and city utilities again exceeding the 1,000 kilowatt-hour mark, and better still to see several exceeding 1,500 kilowatt-hours. These indices of electric consumption return the West to its advanced position in domestic electrification. They also tell a convincing story of a high degree of rural home use, since so many of our Western utilities serve so great a proportion of their total customers in rural areas. In fact the number of companies serving rural territory who report high average consumption in comparison to those serving chiefly in congested cities speaks eloquently for the degree of electrical use in the farm homes of the West, even as it offers a challenge to the cities to avail themselves more of the benefits of electric service.

A glance at the other table on page 46 will tell the reason for this splendid increase in domestic electrification. In that table is listed the remarkable sales record of the past year, as well as the conservative estimate of this year's expectancy.

News of Note + + +

State Ownership Opposed in California

Hearings on state ownership and control of water and power utilities have been started by a joint legislative committee authorized at the last session of the California State Legislature. Testimony is to be secured through meetings held in various communities of the state and a report prepared for submission to the next session of the Legislature.

At the initial meeting in Los Angeles state ownership was vigorously opposed by H. A. Van Norman, chief engineer of the division of water works and supply of the Department of Water and Power of Los Angeles, as well as by T. A. Panter, electrical engineer of the Bureau of Power and Light, and Ralph Criswell, of the Water and Power Commission. Dr. George L. Hoxie, of the Southern California Edison Co., testified that state and federal governments would lose $15,000,000 in taxes immediately and that stockholders would lose $28,000,000 annually in dividends if such a plan was adopted.

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Spokane Company to Renovate Transmission Lines

Work is to be started immediately by the Washington Water Power Co. on a program of construction and renovation of 100 mi. of transmission lines and three sub-stations to provide for increased loads and to improve operating conditions and the continuity of service in the Palouse region in southeastern Washington, and contiguous Idaho territory, according to the announcement of A. J. Turner, chief engineer.

As a result of this program the towns of Colfax and Pullman, Wash., and Moscow, Idaho, will be placed on the 110 kv. system of the Washington Water Power Co. Crews totalling 100 men will be employed on the various projects which will be completed by Aug. 1.

Line crews will re-insulate 62 mi. of line between Lind and Colfax, Wash., increasing the capacity from 60 kv. to 110 kv. and will re-insulate and re-string 16 mi. of line between Colfax and Pullman, Wash., increasing the voltage from 60 kv. to 110 kv. Other crews will construct a new ten-mile 110 kv. line between Pullman and Moscow, and will replace the 15 mi. line between Moscow and Palouse, Wash., with a new line insulated for 110 kv.

New 110 kv. sub-stations will be constructed at Colfax and Pullman and the sub-station at Moscow will be completed and converted from 60 kv. to 110 kv. capacity.

Distribution lines in Pullman will be reconstructed and improved, increasing facilities to the business district and the campus of the State College of Washington.

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Westinghouse Celebrates Golden Jubilee

Utilizing short wave radio communication to stage an international program, the Westinghouse Electric & Manufacturing Co. celebrated the 50th anniversary of the founding of the organization with employee meetings in every city in the world where Westinghouse maintains an organization on Jan. 8. By means of modern communication facilities the thousands of members of the Westinghouse family not only were brought in direct communication with the celebration that was held and broadcast from headquarters at Pittsburgh, Pa., but also brought in closer association with fellow workers in each locality. During the main program, members of the organization heard officials of the company speak on the achievements and contributions Westinghouse has made to the electrical industry and on the possibilities that lie ahead. The main address of the evening was made by A. W. Robertson, chairman of the board of the company.

In the West dinner meetings were staged in Seattle, Portland, San Francisco, Los Angeles and Salt Lake. After the international program had been received, supplementary entertainment was provided for each local meeting which included a new sound motion picture film of new Westinghouse developments. It is estimated that the aggregate attendance at the Western meetings was over 1,000 employees representing all phases of the organization's activities in this territory.

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Utah Power & Light Will Build Steam Plant

Plans for the construction of a $1,600,000 steam-electric generating plant to be built during 1936 have been announced by the Utah Power & Light Co. The plant will be located either on the Jordan River adjacent to the present steam plant near Salt Lake City or on the Provo River near Provo. Construction will start as soon as engineers decide on one of the two sites. It is expected that the plant will be in operation by Sept. 1, 1936.

P. G. & E. Merger Plans Are Approved

Consolidation under its own management of all its stock-controlled subsidiaries was approved for the Pacific Gas and Electric Co. by the California State Railroad Commission on Jan. 20. The merger plan was placed before the commission last August and affected the Great Western Power Co., City Electric Co., Feather River Power Co., Napa Valley Electric Co., California Electric Generating Co., Mt. Shasta Power Co., Sierra and San Francisco Power Co. and the Modesto Gas Co.

In its order the railroad commission reduced the valuations sought by the company for the various properties by approximately $11,000,000. The merger mainly involves a bookkeeping operation as in most instances Pacific Gas and Electric owns all of the common and most of the preferred stocks of the companies involved. The only cash outlay will be one of approximately $2,500,000 to cover preferred stock of the California Electric Generating Co. and $250,000 of Great Western preferred.

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Preliminary Plans Made For A.I.E.E. Convention

Preliminary arrangements for the nation-wide conference of the American Institute of Electrical Engineers, to be held at Pasadena, Calif., June 22 to 26, were announced recently in Los Angeles by Prof. R. W. Sorensen, of California Institute of Technology, chairman of the committee on arrangements. The full committee is as follows: Prof. Sorensen, chairman; Fred Garrison, assistant to chairman; N. B. Hinson, vice-chairman; O. W. Holden, secretary; J. C. Gaylord, treasurer; W. S. Peterson, technical program; G. A. Riley, finance; E. L. Bettannier, transportation; H. L. Caldwell, housing; R. A. Hopkins, entertainment; R. F. Gheen, sports; F. B. Doolittle, publicity; F. C. Lindvall, student activities; Mrs. Mabel Rockwell, ladies; David Hall, registration; and C. P. Garman, inspection trips.

It is expected that some 1,000 delegates, drawn from many parts of the continent, will attend the conference. During the convention there will be a number of inspection trips starting from Pasadena, including conducted excursions along the Metropolitan aqueduct, to Boulder Dam, and probably to Morris Dam and the Municipal Light plant. Trips to Mount Wilson Observatory and the Huntington Library also are contemplated.

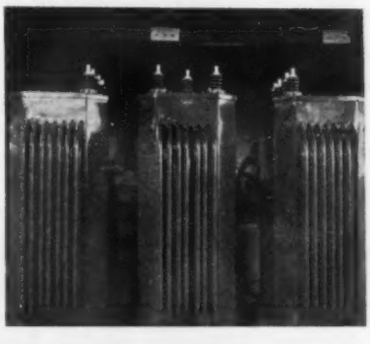
ASSOCIATED OIL

installs GARDNER TRANSFORMERS to meet Unusual Conditions

AN instance of the ability of the Gardner Electric Manufacturing Company to meet the special specifications of its clients, is its recent installation at the Avon refinery of the Associated Oil Company. Simplication of plant wiring, saved space and time were the requirements accurately met by Gardner, as can be seen in the two photographs showing the unusual simple design of these three

transformers. A combination of EXPERIENCE, high quality materials and workmanship, together with our close cooperation towards our customer, enables us to manufacture reliable transformers to meet their most exacting needs.

For quick service on ANY TYPE of transformer or repair work call our nearest representative. WRITE for new descriptive folder.



GARDNER ELECTRIC MFG. CO. 4227 Hollis Street, Emeryville, Calif.

SEATTLE—Decla Sales Co. (Neon Only) 300 Westlake North; DENVER—Kranefeld Eng. Co., 3417 E. 14th Ave.; LOS ANGELES—Utilities Supply Co., 1736 E. 15th St., Decla Sales Co. (Neon Only) 342 Towne St.; SAN FRANCISCO—Geo. E. Honn Co., 420 Market St.

Rate Reductions in Effect in Los Angeles

Reduced electric rates covering all classes of service and designed to stimulate electrical consumption prior to the advent of energy from Boulder Dam went into effect in Los Angeles on Feb. 1. Reductions are estimated to effect a saving to consumers of the Los Angeles Bureau of Power and Light of $1,627,000 per year.

The new domestic schedule provides for the first 35 kw.-hr. per month for dwellings having five or less standard lighting circuits and for 5 kw.-hr. per lighting circuit for each in excess of five at a charge of 4.4 cents per kw.-hr.; the next 75 kw.-hr. 2.3 cents per kw.-hr.; the next 100 kw.-hr. 1.5 cents per kw.-hr. and all in excess 1.25 cents per kw.-hr. Where a consumer installs an approved two-element type of water heater on a separate circuit with provisions for a separate meter and time switch control a rate of .75 cents per kw.-hr. is provided for water heating service. The rate calls for a 55 cents per month minimum except in the case of electric heating installations when capacity in excess of 10 kw. carries a monthly minimum charge of 50 cents per kw.

Commercial lighting service carries a quantity rate for demands of 50 kw. or less which ranges from 4.4 cents down to 1.2 cents. This rate has load factor provisions which permit the earning of a 7-mil bottom rate for loads up to 175 kw.

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• RATE REDUCTIONS ranging up to 15 per cent and aggregating $820,000 a year have been filed by the Los Angeles Gas and Electric Corp. with the California State Railroad Commission. The new schedules were to become effective Feb. 1. Reductions affect all classifications of service including domestic lighting, commercial lighting, power and street lighting.

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• WASHINGTON'S NEW STATE electrical code and license law became effective on Jan. 1. The bill requires a license of $50 and a $1,000 bond from all persons, firms or corporations engaged in electrical wiring or apparatus installation in the state. The National Electrical Code is used as the minimum permissible standard of the state.

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• RATE REDUCTIONS aggregating 12 per cent in both commercial and residential schedules have been ordered for the Grays Harbor Railway & Light Co., Aberdeen, Wash., by the State Department of Public Works. The new tariffs will effect a $45,000 annual saving to the company's 10,000 customers. They became effective Feb. 1.

It's BRASS BUSHED!

"Line up" with these Hemingray Advantages

1. Brass bushed smooth threads for insulator pin.
2. Greater mechanical strength.
3. Sustained high dielectric strength.
4. Unaffected by sudden temperature changes.
5. Withstand maximum insulator pin expansion.
6. Never age or deteriorate.
7. Controlled uniformity of product.
8. All surfaces impervious to moisture.
9. Tougher—withstand rough handling.
10. Clear and flawless for easy inspection.

Owens-Illinois Glass Company, Hemingray Division, Muncie, Ind.

HEMINGRAY Glass INSULATORS

Crescent Wire

47 YEARS

OF KNOWING HOW
in every foot of
CRESCENT
WIRE and
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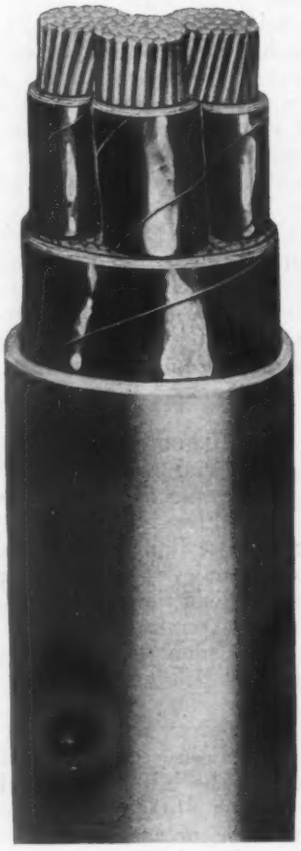
ARMORED CABLE
ARMORED SERVICE ENTRANCE CABLE
ANNUNCIATOR WIRE AND CABLE
APPARATUS CABLE
APPLIANCE CORDS
BARE COPPER WIRE AND CABLE
BUILDING WIRE—ALL TYPES
CONTROL CABLES, BRAIDED AND LEAD
FLAMEPROOF WIRE AND CABLE
FLEXIBLE CORDS AND CABLES
FLEXIBLE STEEL CONDUIT
FIXTURE WIRE
HEATER CORDS
HOOK-UP AND LEAD-IN WIRE
LAMP CORDS
LEAD-COVERED WIRES AND CABLES
MAGNET WIRE
MINING MACHINE CABLE
NON-METALLIC PARKWAY CABLE
NON-METALLIC SHEATHED CABLE
PARKWAY CABLES
POWER CABLE
RADIO WIRE AND HARNESSES
RUBBER INSULATED WIRE AND CABLE
RUBBER SHEATHED PORTABLE CORDS
TELEPHONE CABLES
SERVICE ENTRANCE CABLES
SIGNAL CABLES
VARNISHED CAMBRIC CABLES
WEATHERPROOF WIRE

and all kinds of Special Cables to meet A.S.T.M., A.R.A., I.P.C.E.A. and all Railroad, Government, and Utility Companies' specifications.



Varnished Cambric
Lead Encased
POWER CABLE

WESTERN REPRESENTATIVES

Los Angeles, Cal.—Henger Seltzer Co., 945 E. Pico St.
San Francisco, Cal.—Hodges & Glomb, 1264 Folsom St.

CRESCENT
INSULATED WIRE & CABLE CO. INC.
TRENTON, NEW JERSEY

Federal Power Commission Issues Utility Maps

Two important utility maps compiled by its national power survey have been published by the Federal Power Commission. One map shows the service areas and the other the chief generating plants and transmission lines of the principal electric utility systems in the United States. Both are large maps in full colors.

Map No. 1 identifies separately 57 major utility systems and 8 large municipal systems together with 50 minor holding companies and independent operating companies all represented in color. The systems shown include approximately 600 operating companies The key numbers, distinctive colors and pattern designs make each system readily distinguishable.

The second map indicates the location of 345 hydro-electric plants totaling 8,187,914-kw. capacity and 709 fuel generating plants totaling 22,350,114 kw. capacity. Transmission lines totaling 135,000 circuit miles are shown including all lines of 60,000 volts or above and 63,000 circuit miles of lower voltages.

The maps will be sold by the Federal Power Commission. Prices are: Map No. 1, service areas, unmounted, $7.50, mounted on linen, $10; map No. 2, plants and transmission lines, unmounted, $5, mounted on linen, $7.50.

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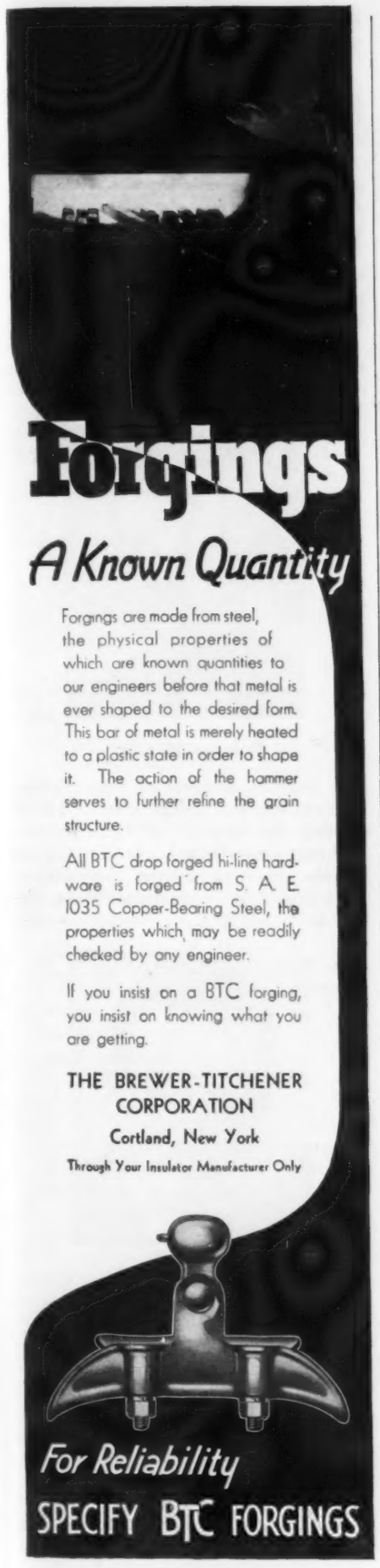
Meetings Held to Honor J. B. Black

James B. Black, newly elected president of the Pacific Gas and Electric Co., was welcomed to his new position in the electrical industry on the Pacific Coast at a number of meetings held during January. Included were a meeting of the San Francisco Electrical Development League on Jan. 6 and a gathering on Jan. 15 sponsored by the furniture and appliance industry of northern California.

More than 300 members of the electrical industry attended the Development League meeting at which Leland Cutler, past president of the San Francisco Chamber of Commerce, was the principal speaker.

Six organizations sponsored the furniture and appliance industry meetings. They were the Western Furniture Exchange, Retail Furniture Assn. of California, Electric Appliance Society of Northern California, the Gas Appliance Society of California, the Pacific Radio Institute, and the California Retail Council. At this meeting the community of interest of the power company and the dealers, manufacturers and wholesalers in the expansion of the appliance market was emphasized.


Forgings
A Known Quantity
Forgings are made from steel, the physical properties of which are known quantities to our engineers before that metal is ever shaped to the desired form. This bar of metal is merely heated to a plastic state in order to shape it. The action of the hammer serves to further refine the grain structure.
All BTC drop forged hi-line hardware is forged from S. A. E. 1035 Copper-Bearing Steel, the properties which may be readily checked by any engineer.
If you insist on a BTC forging, you insist on knowing what you are getting.
THE BREWER-TITCHENER CORPORATION
Cortland, New York
Through Your Insulator Manufacturer Only
For Reliability
SPECIFY BTC FORGINGS

Commercial Conference, N.W.L.P.A. in Spokane

The Business Development Section of the Northwest Electric Light & Power Assn. will hold its annual conference in Spokane, March 5-7, 1936, with headquarters at the Davenport hotel. The dates were changed from those tentatively set in February on account of complications of other meetings, according to W. C. Mainwaring, B. C. Electric Railway Co., chairman of the Section.

The program will run the gamut of load development possibilities in the residential, commercial, industrial and rural fields. Each bureau chairman will present his own part of the program as follows: residential sales, J. A. Lockhart, Pacific Power & Light Co.; commercial and industrial sales, O. C. Mayer, Idaho Power Co.; rural sales, R. S. Overstreet, Idaho Power Co. Lighting and advertising will be covered by committees functioning outside these bureaus, lighting under the chairmanship of J. C. Plankinton, Northwestern Electric Co., and advertising, by James Lightbody, B. C. Electric Railway Co. The lighting committee is further divided into residential, under the sub-chairmanship of Walter Potter, Incandescent Lamp Dept. of G. E. Co.; commercial and industrial, George M. Boyd, Westinghouse Lamp Co., sub-chairman.

Interest in the residential field this year centers largely on water heating. The committee under Tom D. Fulford, Puget Sound Power & Light Co., will take up questions of engineering design, rates and control as well as selling and sales methods.

In the commercial field, heavy duty cooking promises to bring forth valuable conclusions following the outline set for the committee at the Commercial Cooking Conference held in Seattle last fall. Type and design of equipment, simplification of wiring, sales promotion are to be the three sub-topics of the committee's report at the Spokane conference.

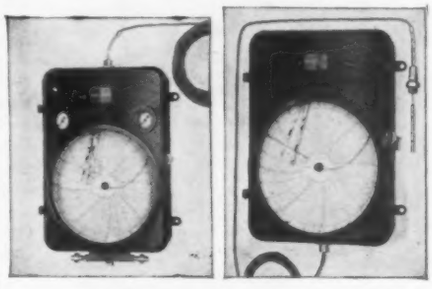
The rural sales bureau will bring out answers to the question why we have to build load on rural lines, and will also discuss methods by which equipment can be sold with particular reference to financing.

•

• CREATION OF A county-wide public utility district in Stevens County, Wash., will be voted on at the general election in 1936. The county commissioners passed a resolution to this effect after receiving a petition through the county Grange signed by 1,100 names. Pend Oreille County will have a similar power district proposal on its general election ballot in the fall.

PRECISION Temperature Control

. . . as you like it and as you need it



Full Floating Free Vane Air Operated Temperature Recorder Controller, Model 5240M. Class 11 vapor filled system. Single pen thermometer. Wall type.

Direct-Set Mercury-Contact Electric Operated Temperature Recorder Controller, Model G240L. For wall mounting.

NO TWO control problems are alike. Consequently no one controller can be expected to serve best under all conditions.

Because of certain reasons which you can't overlook, or because of individual experiences and preferences, you may prefer one type of automatic temperature control. Other process conditions may require other types.

Bristol provides a complete line of equipment so diversified in design, type, method of operation and applicability, that several solutions of a given problem often are available. This permits a selection assuring the highest efficiency.

Since in addition Bristol makes a complete line of automatic valves, Bristol is in the favorable position of being able to develop the complete control system as a balanced, correctly coordinated unit, and to assume undivided responsibility for its satisfactory performance.

Feel free to consult us.

THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco
747 Warehouse St., Los Angeles
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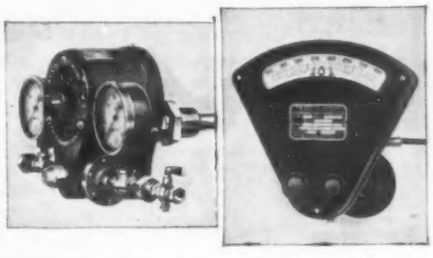

Air Operated Temperature Controller, Expansion Stem System, Direct Acting, Series 250.

Electric Operated Temperature Indicating Controller, Model 377B. With single or double adjustment contacts.

BRISTOL'S

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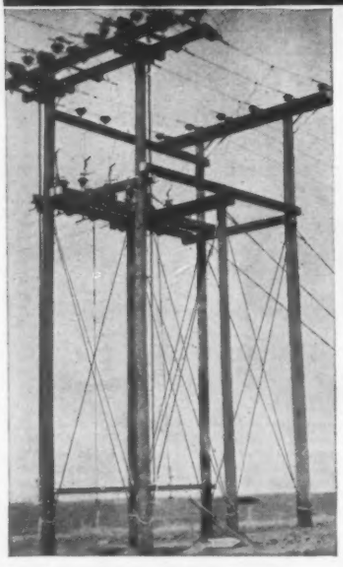
Crapo
GALVANIZED PRODUCTS



Made to Surpass Rigid Specifications

Crapo Galvanized Seven-Wire Steel Strand combines every element essential to dependable, economical line construction and maintenance. The non-cracking, non-peeling *pure* zinc galvanized coating guarantees maximum resistance to corrosion. Proper ductility makes the strand easy to serve. Correct tensile values insure more than ample strength for guys and spans.

These factors are scientifically controlled in all *Crapo* Galvanized Products by vigilant laboratory supervision over each step in manufacture.

You can depend upon genuine *Crapo* Galvanized Steel Strand and Wire to more than meet the most exacting specifications.

Indiana Steel & Wire Co.
Muncie, Indiana

(*Left*) Switching station, Northwestern Public Service Co., Huron, South Dakota. Guyed with *Crapo* Galvanized Seven Wire Steel Strand.

Steel Strand
• • •
Telephone and Telegraph Wire

? ? ? What is the ? ? ?

T R U T H

ABOUT KNOB AND TUBE WIRING

The day of propaganda-inspired prejudice concerning the relative merits of the various wiring methods is over! In a recent poll, Electrical Inspectors for municipalities, insurance and utility companies, by a landslide vote, favored the more general use of Knob and Tube Wiring.

Be open minded—get the FACTS—the use of Wiring on Porcelain Knobs and Tubes is on the increase because it is not only as SAFE as any other wiring method, low in cost, but it also has the longest life!

This type of construction is equally suitable for all wood frame structures, whether urban or rural. Specify knob and tube wiring installed in accordance with the requirements of the National Electric Code, 1935 issue. *Write Department "C" today for installation rules.*

USE Porcelain Safety Economy Permanence

STANDARD ELECTRICAL PORCELAIN MANUFACTURERS

201 N. WELLS ST., CHICAGO, ILLINOIS

Central Arizona Power Promotes Executives

Edward H. Coe, vice-president and general manager of the Central Arizona Light & Power Co. since 1925, was elected president to succeed Howard L. Aller at a meeting of the board of directors held in Phoenix Dec. 31, 1935. Mr. Aller recently was elected president of the American Power & Light Co. At the same meeting A. F. Morairty, who for a number of years has been assistant general manager, was elected vice-president.

Mr. Coe entered the electrical industry in the lamp department of the General Electric Co. at Harrison, N. J., in

EDWARD H. COE

1911 after his graduation from Stevens Institute of Technology. In 1912 he entered the employ of the Niagara, Lockport and Ontario Power Co. at Buffalo, working in the engineering, construction and sales departments. Before he terminated his connection with

A. F. MORAIRTY

the company in 1916 he had been made assistant to the general manager.

From Buffalo Mr. Coe went to Colorado and became affiliated wih the Colorado Power Co., beginning as engineer and eventually becoming sales manager. When the Public Service Co. of Colorado took over the Colorado Power Co. in 1924, Mr. Coe was put in direct charge of the entire system of the latter company and also acted as assistant to

the general manager. He served in this capacity until 1925 when he joined the Central Arizona Light & Power Co. at Phoenix.

Mr. Morairty's career in the utility industry closely parallels Mr. Coe's. He was graduated from the University of Michigan with the degree of electrical engineer in 1911. He returned to his home state, Colorado, to take charge of the operation of the irrigation pumping plant at Loveland for the Eastern Colorado Power Co. From there he went to Monte Vista as construction and operating engineer for the Monte Vista Light, Heat & Power Co. In 1912 he became associated with the Colorado Power Co., serving successively as district manager in several territories and later as assistant sales manager. When Mr. Coe left the department, Mr. Morairty was made assistant to the general superintendent and district manager of the Public Service Co. of Colorado. A short time later Mr. Coe brought him to the Central Arizona Light & Power Co. as commercial manager. Since 1928 he has held the position of assistant general manager.

•

Bills Would Make REA Permanent

Similar bills placing the rural electrification activities of the federal government upon a permanent basis and authorizing the annual expenditure over a 10-year period of $100,000,000 for this purpose have been introduced into both houses of Congress by Senator George W. Norris, of Nebraska, and Representative Sam Reyburn, of Texas. Both provide for the creation of a new rural electrification administration to take over the duties of the present agency.

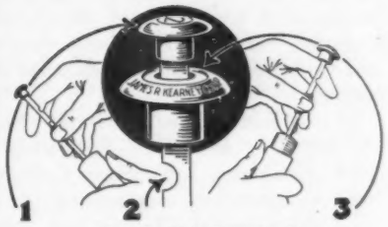
Government financing of house wiring and appliance sales, both electrical and plumbing, along federally financed rural lines is authorized by the bill. Such loans can be made to the project sponsors, suppliers or contractors and to individual consumers. The purpose of the bill is to promote the extension of electric light and power service into unserved rural areas by making 3 per cent loans to be amortized over a 40-year period to local governmental units, farm cooperatives and non-profit organizations but not to privately-owned utility companies.

•

• CONSTRUCTION of the $900,000 Pioche-Boulder Dam transmission line will start sometime during February. Bids for labor and material were to be opened at Pioche Feb. 5. Specifications call for the construction of 155 miles of 110-volt, H-frame wood pole lines.

WHERE TO BUY . . . IN THE WEST

KEARNEY
FITALL
FUSE LINK



No. 1 for ½-in. Buttonhead
No. 2 for Flat Terminal
No. 3 for ¾-in. Buttonhead

Triple terminal—spring feature on low amperages—all metal corrosion resistant—accurate performance—one link for all 15,000 volt expulsion or tension type cartridges.

Bulletin 312 Gives Complete Information

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Manufacturers of

Type AEIC
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Concentrically wound bare neutral conductor, galvanized oval armor, weatherproof and flameproof finish.

For use on entrances without conduit.

Proof Against Theft of Current

Samples and prices on request.

PROVIDENCE INSULATED WIRE CO.
PROVIDENCE, R. I.

LAPP
Line Post
Insulators

Lapp Line Post Insulators eliminate radio interference due to both dirt and electro-static conditions.

Write for Bulletin No. 112 describing and cataloguing these insulators.

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Le Roy, N. Y.

LOCUST PINS

. . . . . Oak Brackets *and* Pole Steps *Safety—Strength and Lasting Economy*

LOCUST PIN CO. — Front Royal, Va.

MAYDWELL & HARTZELL
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FACTORY DISTRIBUTORS
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With JEFFRIES

Air Cooled Transformers

YOU can inaugurate many plant economies with the efficient and dependable Jeffries Air Cooled Transformers. These transformers simplify plant distribution systems by eliminating the expense of long secondary conduit runs and providing voltage change at the point desired. Jeffries transformers are available to meet all requirements with special design made to order. Type S.S. transformer, 50 to 250 watts shown above.

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CHROMALOX
Super-Speed
ELECTRIC RANGE UNITS

build load by

making every user a booster for electrical cooking. No big stocks necessary to fit any range—inexpensive adaptor rings take care of the fit. Minimum service expense, too. Get the details of the unfailing Sales Campaign. Write us.

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...about People

R. M. Alvord Heads S. F. Chamber of Commerce

Raymond M. Alvord, San Francisco district manager of the General Electric Co., has been elected president of the San Francisco Chamber of Commerce for the year 1936. Since January, 1933, he has been a director of the organization and has served as both chairman and vice-chairman of its industrial committee.

Mr. Alvord was born at Scales Mound, Ill., in 1883. Following his graduation from Iowa State College in 1904 in electrical engineering, he entered the General Electric test course, being transferred to San Francisco in 1906 as salesman. In 1911 he was made manager of the supply department and in 1920 added the responsibilities of management of the Edison Lamp department. He was subsequently appointed sales manager of the San Francisco district, Pacific Coast manager of the Merchandise Department and in 1926, to his present position.

He has many outside interests. An active Rotarian, he served as president of that organization in 1930. He has been president of the San Francisco Sales Managers' Association, a director of the Downtown Association, chairman of the Community Chest Campaign Committee, and vice-chairman of the industrial committee and chairman of the iron and steel committee of the California State Chamber of Commerce. In 1934 he was president of the Engineers' Club.

He was for many years a director of the Pacific Coast Electrical Bureau, serving as vice-chairman of that body and chairman of its lighting committee. At the present time he is a vice-president and director of the Pacific Coast Electrical Association.

•

Former President of Contractor Group Dies

Charles Shipman, president of the Atlas Electric & Engineering Co., died suddenly Dec. 29, in San Francisco. The former president of the Electrical Contractors Assn. of San Francisco, Mr. Shipman was known throughout the northern California electrical contracting fraternity as a sincere and tireless worker for electrical contractors.

For the past several years he had handled the relationships between the contractors and inspectors association on codes and ordinance matters. Mr. Shipman entered the paint business, leaving a junior college in Oakland, where he was a classmate of Paul M. Downing, to go into business. He later worked for the Stimel Electric Co. which he and E. W. Lauer bought out and formed the firm of Shipman and Lauer. The latter absorbed the Atlas Electric Co.

In 1926 he was made president of the San Francisco Contractors Assn. When construction activity reached low levels he conceived the idea of consolidation of several firms for diversification of business and advocated a corporation of this type. While the offer was not accepted by other members of the association a partnership was entered into by the Atlas Electric Co. and Schultz-Morris Electric Co., a motor and industrial contracting firm, and a new company, Atlas Electric & Engineering Co., was formed, of which Mr. Shipman was president. Wm. Schultz succeeds Mr. Shipman as president of the firm, Mr. Lauer remaining secretary-treasurer.

•

Crellin Assumes Presidency of S. F. Engineers' Club

The electrical industry apparently insists upon adding the title of president to the name of E. A. Crellin, assistant to P. M. Downing, vice-president and general manager of the Pacific Gas and Electric Co. At the January meeting of the San Francisco Engineers' Club he was elected president of that organization for the current year and succeeds Raymond M. Alvord, manager of the local office of the General Electric Co.

On Feb. 24 Mr. Crellin will complete a year as president of the San Francisco Electrical Development League. He is widely known for his activities in civic and industry affairs, having been chairman of the local section of the A.I.E.E. in 1931-32 and prominently identified with the Pacific Coast Electrical Assn. committee work.

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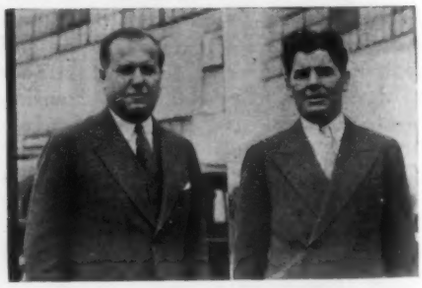
Hubbard Promotes



W. W. Glosser (left) recently elected vice-president in charge of Pacific Coast operations of Hubbard & Co., has announced the appointment of Harold Q. Noack as Pacific division sales manager. Mr. Noack was formerly assistant sales manager. The territory served by the Pacific division includes Washington, Oregon, California Nevada and Arizona

George Bragg Made Assistant Manager

George T. Bragg, for the past eight years personnel manager for Pacific Power & Light Co., Portland, was appointed assistant general manager on Jan. 1 by Lewis A. McArthur, vice-president and general manager. He will remain in charge of personnel in addition to his new responsibilities.

Mr. Bragg joined the company as bookkeeper in the Hood River, Ore., office in 1916 and, except for a period of study at the University of Washington and a term with the army during the World War, has worked for the company continuously ever since in various capacities.

●

• MEDAL—Word was received in Portland, Ore., Jan. 16, that the George H. Norman medal of the American Society of Civil Engineers was awarded posthumously to D. C. Henny of that city for "outstanding contributions in concrete gravity dam construction." Mr. Henny, who died July 14, 1935, was a consulting engineer, residing in Portland for many years. His work as consultant on practically every dam constructed by the Reclamation Department of the federal government in recent years brought him an international reputation. His association with every large public dam project in the west including Boulder, Bonneville and Grand Coulee, and many private projects made him a well-known and highly respected figure in western engineering circles.

●

• R. W. STEVENS was recently appointed by J. M. Perlewitz, sales manager of Graybar Electric Co., Salt Lake City, as representative in charge of major appliance distribution in the inter-mountain territory of the company. A new sample room has been equipped to display the various merchandise lines carried by Graybar and which the trade may view and select from the samples.

●

Walter Kenney Becomes Electric Club President

Walter A. Kenney, vice-president and manager of the Ramsey Sign Company, Portland, was elected president of the Electric Club of that city Jan. 9. Mr. Kenney has been associated with the electrical industry for some years in the sign business. He succeeds as president of the Club Walter E. Potter of the Incandescent Lamp Dept. of General Electric Co., who has held the position for the past six months. The Portland Club provides for a six months' terms for its presidents.

Other officers elected were: 1st vice-president, Orr E. Crites, Portland General Electric Co., who will automatically succeed to the presidency July, 1936; 2nd vice-president, Verne M. Miller, North Coast Electric Co.; secretary, Crit L. Woolsey, General Electric Supply Corp.; treasurer, Jay J. Goodman, Northwestern Electric Co.; sergeant-at-arms, Fred Starrett, Portland General Electric Co.; and directors, Bruce Kilmore, Pacific Power & Light Co., and John E. Lorenz, optometrist.

●

• HORACE A. CASE, sales specialist in charge of the government and railway departments of the Graybar Electric Co. at San Francisco, died at his home in that city early in January. He joined the Western Electric Co. 29 years ago shortly after his graduation from the University of California and spent his entire career in the company's Northwest and San Francisco districts.

●

• WILLIAM C. WEBSTER, claim and right-of-way agent for the Northwestern Electric Co., died on Jan. 4 at his home in Portland, Ore. He had been a member of the engineering staff of the company since 1914 except for the period of the World War when he served as a first lieutenant in the United States Army and later with the Red Cross.

THE CONTRACTOR'S SYNONYM FOR CONVENIENCE . . .

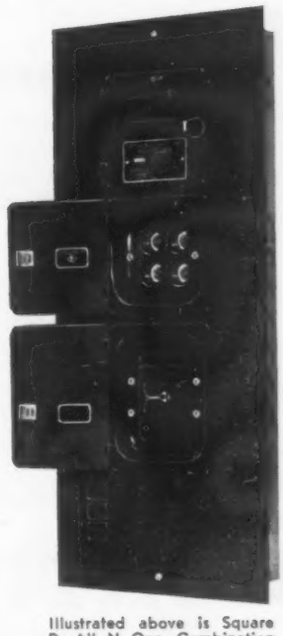
ALL-N-ONE

In Square D's language All-N-One means THE combination switch and fuse cabinet. In the contractor's vocabulary All-N-One is the synonym for convenience both from the standpoint of his customer and himself.

Note the main disconnect switch, of the new Rotor-Disc Type, mounted at the top of the cabinet, and the fuse cabinet, ready for use by the consumer. Make a note, too, of the dead front fuse break for the control of electric range and water heater circuits.

Then, there are Despard devices located in the trim of the panel. These convenience outlets are the marks of the modern residence panel—eliminating the necessity of wiring separately mounted outlets.

Square D All-N-One Switch & Fuse Cabinets are for installations involving the new meter sequence: meter—switch—fuse, and are available for flush or surface mounting. Standard finish is a durable baked black crystallac. Available in capacities from 1-60 amp. circuit to combinations of 18-30 amp. circuits and 1-60 amp. circuit.



Illustrated above is Square D All-N-One Combination Switch and Fuse Cabinet, Catalog ADF 460.

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THIS TAG IDENTIFIES ALL KORTICK PRODUCTS
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CERTIFIED AS TO THE QUALITY OF THE MATERIALS, MECHANICAL CONSTRUCTION, CONFORMITY TO SPECIFICATIONS
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OF

★ *SATISFACTION*

Kortick will manufacture pole line hardware to meet your specific specialized designs. Or you can select from Kortick's complete line of standard items—from ground rods to pole top-pins. Either method assures you complete satisfaction.

★ *LONG LIFE*

The highest quality of materials and workmanship enable leading coast utilities to rely upon the long-life dependability of Kortick hardware.

★ *SERVICE*

For prompt delivery service to all points in the West, Kortick maintains complete warehouse stocks at San Francisco, Los Angeles, Portland and Seattle.

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OFFICE—PLANT—WAREHOUSE

345 FIRST ST.
SAN FRANCISCO

Telephone GArfield 8080

...about the Trade

Graybar Opens New San Diego Branch

Graybar Electric Co., Inc., has opened a branch house at 732 Seventh Ave., San Diego. R. T. Redfield, who for several years has been identified with the Balboa Electric Co., has been appointed branch manager with R. R. Jameson as service supervisor. Al Hardy will be in charge of appliance sales in the territory served by the branch.

Mr. Redfield is well known in the electrical fraternity in San Diego through his activities in the San Diego Electric Club for which he has served as director and chairman of the program committee.

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ELECTRICAL TESTING LABORATORIES

Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory.

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Reports and Valuations, Public Utility Industrial Properties

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- **RATES per column inch of displayed ads is $3.75.**
- **ALL classified ads are payable in advance.**

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ELECTRIC UTILITY FOR SALE—In growing section of Western state, serving towns on National Parks Highways. Over 60 miles transmission and distribution system of A1 construction six years old. Over 400 consumers (55% increase over two years ago). Good government contract and wholesale contract with neighboring utility. Annual gross averages $25,000. Other interests demand time of owners. $30,000 cash will handle. Write Box 45, Electrical West, 883 Mission Street, San Francisco, Calif.

WANTED—Electric motor shop service superintendent for shop in Bay District. Must qualify as to his experience, ability to direct men, and must possess good disposition. In answering give full details of experience, etc., and salary desired. Write Box 35, Electrical West, 883 Mission Street, San Francisco, Calif.

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FRICTION TAPE
FRICTION CLOTH
AND SPLICING
COMPOUNDS

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420 MARKET ST., SAN FRANCISCO

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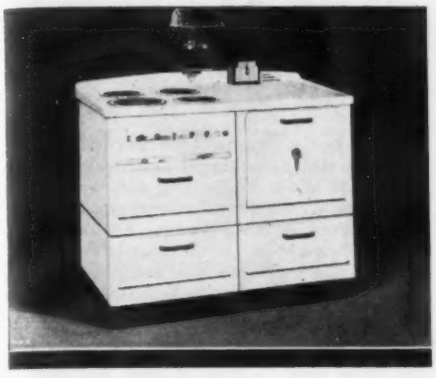
COMPLETE STOCKS CARRIED AT ALL 3 PACIFIC COAST POINTS

CLIFTON MFG. CO.
65 BROOKSIDE AVE., BOSTON, MASS.

...in New Equipment



Ranges Added to Kelvinator Line

Included in the appliance line of Kelvinator for 1936 are 12 refrigerator models, 9 new electric range models and 5 new electric water heaters. The electric ranges incorporate a new development in high speed units for both surface and oven cooking which eliminate the necessity of preheating. They employ a dual method of heat transference which utilizes both conducted and reflected heat. The electric range line consists of 5 standard models and 4 special models. All are of unit body construction with porcelain exteriors and stain-resistance table tops and back plates. The model pictured is known as K-56, a DeLuxe range with 2 large storage drawers, black porcelain base, complete electric light assembly, minute minder, condiment set and lighting fixture. The new water heaters consist of only 3 parts, a heavily insulated hot-dipped galvanized, copper bearing steel tank, an element and a thermostat all built into one solid unit. The element is made of heavy resistance wire and inclosed in a housing welded to the side of the tank. One 30-gal. model rated at 2000-watts is built as a companion to one of the electric ranges and is of table top height.

●

Night Lamp

A new 7-watt Mazda lamp known as a "Nite-Lite", designed for service on 110 to 125-volt circuits, with a rated life of 2,000 hrs. at 118 volts, has been announced by the Westinghouse Lamp Co., New York. A candelabra base permits its use in the majority of base-board units now on the market. It lists at 10c and is available in either a clear or a blue-coated C-7 bulb. The clear bulb design is recommended for safety lighting purposes at those places where people are most likely to slip and fall. The blue coated bulb which produces a light of moonlight color and intensity is available. Shades of the base-board units will not reduce the glow of a clear bulb lamp and thus remove too much of the useful illumination.

●

Soil Heating Kit

A complete electric soil heating kit, capable of handling a 36-sq. ft. growing bed, has been placed on the market by the General Electric Co. The new kit requires no special wiring or installation expense. It consists of a 16-ft. assembly of soil heating cable and a thermostat assembly with a duplex receptacle and 3-ft. all-rubber cord with plug. The duplex receptacle permits the use of two 60-ft. lengths of cable if required. A 230-volt kit is also available with each cable assembly 120-ft. in length. The price of the 115-volt kit is $16.00 and an extra 60-ft. cable assembly is $4.50.

Telephone Cord Retriever

Adaptation of the cord retriever known as Boschord to a telephone has been made by Henry Bosch, proprietor of Bosch Products Co., San Francisco. The device comes in a metal tube the height of a desk which can be attached to its side. By a slight pull or release the standard 5-ft. 6-in. telephone cord will automatically adjust itself to any extended length desired. Without strain on the cord it will retrieve itself into the compartment without speeding up or running away. It is being distributed by the O. C. Haney Corp., office supply firm in Los Angeles and San Francisco, and is priced at $5.50.

●

Grounding Fittings

Four new conduit grounding items consisting of a box for fixture mounting and 3 grounding fittings adaptable to conduit have been announced by the General Electrical merchandise department, Bridgeport, Conn. The fixture box provides a simple and effective method of grounding and makes possible firm mechanical and electrical connections between the box and the armor. Two of the conduit fittings are intended for ½ and ¾-in. pipe and are equipped with a reversible shackle which fits 3 sizes of water pipe. The third fitting has a connection which firmly grips and holds armored cable.

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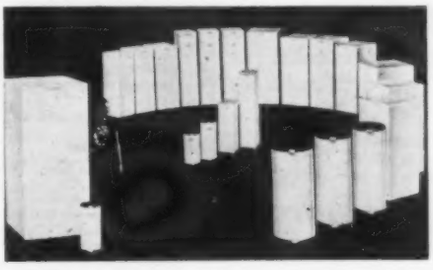


Styled Water Heaters

Twenty-two new models, ranging in size from 1 to 140-gal. capacity constitute the new line of Hotpoint electric water heaters just announced by Edison General Electric Appliance Company, Chicago. Predominant in the line is the vogue "square" type heater introduced last year and available in 16 different sizes. The remaining 6 models are round type heaters. All of the new models are finished in Hotpoint's new Calgloss Baked enamel. The heating units are Calrod, immersion type. Each of the models has 3-in. rock wool insulation.

Small Fuse Switch

A new Colt-Noark "Protectit" a compact and simple combination control device which functions as a manually operable switch with automatic current overload protection has been placed on the market by Colt Patent Firearm Mfg. Co. It is adapted for mounting on the cover plate of an outlet box or directly on a wall or appliance. It has a maximum voltage rating of 250-volts a.c. or d.c. in any of its ampere ratings. Maximum horsepower rating is 1-hp. The operating mechanism consists of a bimetallic strip serving as a mechanical latch connecting the switching member and its movable contacts with the handle. Overheating of the strip, by the passage of an electrical overload through it, causes it to bend sufficiently to release the switching member, thereby breaking the circuit. Two types are available: type BH which makes use of interchangeable heater elements and type B which has a fixed ampere rating and cannot be changed. Nineteen differently rated heater elements may be obtained.

●

Lighter Strain Clamps

Ohio Brass Company, Mansfield, Ohio, has announced a new line of "Hi-Lite" strain clamps, which are nearly 50 per cent lighter in weight and which have been found to develop 90 per cent or more of the rated strength of A.C.S.R. or copper conductors, within the size range of the clamps. There are six clamps in the line evenly graduated as to seat sizes. This permits the selection of a clamp that will fit any conductor now in commercial use. Keeper-pieces of the new clamps are non-reversible, making it impossible for linemen to install the keeper-piece in any manner other than the correct one.

●

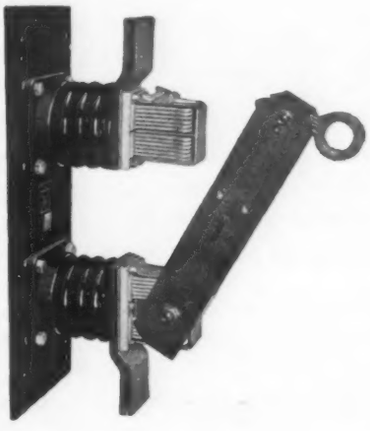
Display Case Light

A new type Display Case-Lite has just been announced by the S & M Lamp Co., Los Angeles. The reflector is constructed of pure sheet aluminum with a polished aluminum cap, chromium rod and red lacquered outlet box. Two sizes are available; 9½-in. dia. with a 200-watt lamp and 7-in. dia. for a 100-watt lamp. These lights are adaptable to all open-shelf displays of merchandise.

●

Multi-Point Disconnects

Schweitzer & Conrad, Inc., Chicago, Ill., has developed a new line of multi-point contact disconnecting switches in which solid contacts are replaced by a series of wire contact fingers consisting of hard drawn copper wires swedged into a terminal block. Each contact wire has a rolled silver insert which makes silver-to-silver contact with an inlaid silver ribbon in the switch blade. Ease and coolness of operation are two advantages claimed for the new switch.



...in Trade Literature

BENJAMIN ELECTRIC MFG. CO., Des Plaines, Ill., has produced a new 28-page bulletin giving complete data on the new 400-watt high intensity mercury vapor lamp together with complete description and illustrations of Benjamin lighting fixtures for utilization with this new light source. In addition there are data on how the lamp operates, its color composition and its advantages for various types of interior and exterior illumination.

●

"AIR CONDITIONING BY SERVEL" is the title given a new manual on air conditioning just issued by the Servel Company, of Evansville, Ind., Commercial Refrigeration Division. Prepared in typewriter text, reproduced by the photo-litho process, containing a large number of clever illustrations, the manual not only gives the fundamentals of air conditioning and illustrates various systems, but contains a great deal of data of value in the preparation of plans and specifications for such installations.

●

CONSUMER USE OF SELECTED GOODS AND SERVICE, by Income Classes—being prepared by the Department of Commerce in various cities throughout the country. Among the subjects covered of interest to the electrical industry are building materials, fuel for heating, fuel for cooking, lighting facilities, and mechanical refrigeration.

●

"CONTROLLING COSTS AND OPERATIONS OF BUSINESS AUTOMOBILES", a survey of 53 companies conducted by the Policyholders Service Bureau of the Metropolitan Life Insurance Co. is available to business concerns. It considers such subjects as, "should the company or employee own the car, in what form should reimbursement for expenses be made, what are some of the predominating policies with relation to financing new cars, insurance, trade-ins, personal use of cars," etc.

●

AMERICAN FEDERATION OF INVESTORS, INC., of which Hugh S. Magill is president, is an outgrowth of the Utility Investors Association which has been enlarged to embrace the interests of investors in all types of American business. A pamphlet on the purposes and program of the organization is available from its headquarters, 203 North Wabash Ave., Chicago.

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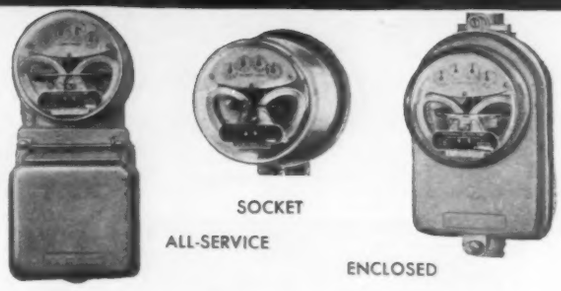

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400-17

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Index to Advertisers
February, 1936

Allis-Chalmers Mfg. Co. 16
Aluminum Company of America 4
Brewer-Titchener Corp., The 75
Bristol Company, The 75
Burndy Engineering Co. 80
California Oregon Power Co. 66, 67
Classified Section 80
Clifton Mfg. Co. 80
Corning Glass Works 6, 7
Crescent Ins. Wire & Cable Co. 74
Edison General Elec. Appliance Co., Inc. 12, 13
Frigidaire Corporation 21
Gardner Electric Mfg. Co. 73
General Electric Co. 10, 15, 22, 24, 83
Graybar Elec. Co., Inc. 8
Hubbard and Company 17
Idaho Power Co. 66, 67
Indiana Steel & Wire Co. 76
International Nickel Co. 11
Jeffries Transformer Co. 78
Kearney Corp., James R. 77
Kelvinator Corp. 2
Kortick Mfg. Co. 80
Lapp Insulator Co., Inc. 77
Locust Pin Co. 77
Maydwell & Hartzell, Inc. 77
Mountain States Power Co. 66, 67
National Carbon Co., Inc. 84
National Enameling & Stamping Co. 3
Northwestern Electric Co. 66, 67
Owens-Illinois Glass Co. 73
Pacific Coast Electrical Bureau ..... Back Cover
Pacific Electric Mfg. Co. 5
Pacific Gas and Electric Co. ..... Inside Back Cover
Pacific Power & Light Co. 66, 67
Pelton Water Wheel Co. 18
Portland General Electric Co. 66, 67
Professional Directory 80
Providence Insulated Wire Co. 77
Puget Sound Power & Light Co. 66, 67
Roebling's Sons Co., John A. 19
Roller-Smith Co. 82
Savage Distributing Co. 83
Smoot-Holman Co. 14
Southern California Edison Co. Ltd. ..... Inside Front Cover
Square D Company, Inc. 79
Standard Electric Porcelain Mfrs. 76
Standard Electric Stove Co. 83
Thermador Elec'l Mfg. Co. ..... Front Cover
Utah Power & Light Co. 66, 67
Washington Water Power Co. 66, 67
Wesix, Inc. 23
Western Hardware & Tool Co. 83
Weston Elec. Instrument Corp. 20
Wiegand Co., Edw. L. 78
Youngstown Sheet & Tube Co. 9

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